



STORMWATER MASTER PLAN

MARCH 2019



City of Cedar Park Stormwater Master Plan



March 2019

DRAFT
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EXECUTIVE SUMMARY

The City of Cedar Park (City) has identified areas with significant flooding issues around the City and developed several priority project areas with planning-level cost estimates. To develop mitigation plans for these project areas, the City contracted with Freese and Nichols, Inc. (FNI) to refine the project costs, rank the project areas, research and summarize funding options, assist with public outreach efforts, and summarize these tasks in a stormwater master plan report. This master plan ultimately serves to provide prioritization and recommendations for updating the City's Capital Improvement Plan.

Based on information compiled over many years studying this issue, City staff and FNI identified and studied 18 "project areas" around the City with known flooding issues. Much of the information came from previous studies and data collected during and after Tropical Storm Hermine in 2010 as well as City staff's many years of experience in dealing with flooding issues around the City. These are called "project areas" because each project area is not necessarily one project and many of these areas will likely require more than one project to mitigate the flooding issues. Most of the project areas are in older residential neighborhoods that were developed with little or no drainage infrastructure before the City was incorporated in 1973.

City staff identified and analyzed potential capital projects within each identified and studied project area that could mitigate the flooding issues and developed planning level cost estimates for each project area. The projects fall into two basic categories – large creek or FEMA floodplain projects and residential or local infrastructure projects. The three large creeks that run through Cedar Park with known flooding issues are Block House Creek, Spanish Oak Creek and Cluck Creek. The residential areas with known flooding issues include Riviera Springs, Ranchettes Units 2, 3, 4, 6, 6A and Deer Run. Each project area will require additional detailed engineering analysis and design before construction. FNI developed a planning level cost estimate for each priority project area based on 2019 dollars, including easement and right-of-way (ROW) acquisition cost estimates provided by the City, plus an estimate of engineering costs to perform field investigations and develop final designs.

FNI ranked the priority project areas using four weighted criteria developed through coordination with City staff. These criteria are public safety focused and include impacts to emergency services and public safety, flooding of habitable structures, cross-flow/localized flooding, and roadway flooding. Criteria weighting was developed using a "pairwise" methodology that individually compares each criterion to all other criteria to determine what factors are most important. The project ranking provided in this master plan is intended to serve as a planning tool for City staff to use in making recommendations to the City



Council for budgeting and implementation. Implementation will depend on various factors such as funding availability, grant potential, easement acquisition, and state and federal agency permitting. A one-page summary sheet for each priority project area is provided in Appendix A.

As part of the preparation of the master plan, FNI evaluated a wide range of funding mechanisms and the City employed a public outreach process. The City held open houses and conducted an online survey to receive feedback from citizens. The ultimate funding decision was to pursue the sales tax reallocation election. This method, which was ultimately approved by the voters in May of 2018, authorizes an allocation of 25% of the revenues from the Type A Economic Development Corporation to the City's General Fund for stormwater drainage and related street facility improvements.

Finally, in October 2018, FNI provided engineering documentation in support of a Hazard Mitigation Grant Program (HMGP) application for Block House Creek.

1.0 INTRODUCTION

In 2017, the City of Cedar Park authorized Freese and Nichols (FNI) to provide professional engineering services to develop the City of Cedar Park Stormwater Master Plan. The authorized services included analyzing the City's conceptual solutions for identified drainage problems and associated cost estimates, developing a ranking system to prioritize projects, research and summarize funding options, and assist with public outreach efforts.

Spurred by a long history of known flooding issues in older areas of the city with inadequate drainage infrastructure, City staff initiated a stormwater master plan study to develop an approach for prioritizing and addressing City-identified flooding issues. In 2010, City staff completed the *Preliminary Drainage Study for Certain Flood Prone Areas in Cedar Park*. This study identified priority project areas and developed conceptual improvements to mitigate the drainage issues and their associated costs. In 2016, URS completed the *Upper Brushy Creek Watershed Flood Protection Plan (FPP)* for Upper Brushy Creek WCID and the Texas Water Development Board. This included conceptual road crossing and channel improvement projects associated with Block House Creek between US 183 and Peach Tree Lane and associated costs. These previous studies are on file in the City's engineering department.

This stormwater master plan incorporates priority project areas initially identified by these two studies. FNI's evaluation of the projects included site visits, communications with City staff, and review of past studies, geographic information system (GIS) data, and documented flooding concerns. City staff met with FNI to provide first-hand knowledge of the issues, provide detailed information on the priority project areas, and provide data from past studies.

FNI updated each conceptual project cost to use consistent assumptions and adjusted the unit costs to 2019 dollars. Each priority project area was then scored according to four weighted criteria and prioritized to create an implementation plan.

2.0 MASTER PLAN DEVELOPMENT

2.1 MAJOR STORMWATER PROGRAM TASKS

The following is a list of tasks that will be addressed with the newly formed Stormwater Program in addition to regular maintenance and operations of existing stormwater facilities:

- **Update FEMA FIRM Maps** – The Upper Brushy Creek Water Control Improvement District (UBCWCID) has submitted an update to the FEMA FIRM maps and FIS reports based on updated data for all creeks that drain to their reservoirs. The City will update maps and information once these maps have been adopted and work with the community on how this information affects development and properties.
- **Incorporate Atlas 14 Data** – Atlas 14 is a study completed in late September 2018 by the National Weather Service (NOAA) and other agencies to update historic rainfall intensities in Texas with data going through 2017 and including Hurricane Harvey. The City will update the rainfall intensities with Atlas 14 data and develop new criteria to be used in hydraulic and hydrologic studies for future projects.
- **Update Drainage Criteria Manual** – The City will be working with consultants to review current drainage criteria and update it where necessary. Currently, the City has adopted the City of Austin Drainage Criteria Manual (DCM). Staff will determine if the City should update the criteria with additions or exclusions to the City of Austin DCM or develop a City of Cedar Park DCM.
- **Priority Project Area Ranking** – The City has evaluated and ranked the areas in the City with known flooding areas. The following sections of the Stormwater Master Plan outline the process and the rankings.

2.2 PRIORITY PROJECT AREA IDENTIFICATION AND DEVELOPMENT

Based on information compiled over many years, City staff and FNI identified and studied “project areas” around the City with known flooding issues. Much of the information came from previous studies and data collected during and after Tropical Storm Hermine in 2010 as well as City staff’s many years of experience in dealing with flooding issues around the City. These are called “project areas” because each project area is not necessarily one project and many of these areas will likely require more than one project to mitigate the flooding issues. Most of the project areas are in older residential neighborhoods that were developed with little or no drainage infrastructure before the City was incorporated in 1973.

The project areas are shown in Table 1. Each project is identified by its name and ID letter. The project areas are also depicted on the attached priority project area index map (Figure 1), one-page summaries (Appendix A), and detailed maps (Appendix C). The maps were revised through coordination with City staff and field visits.

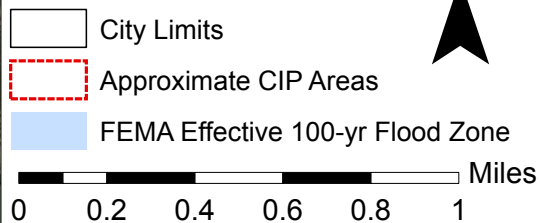
The priority project areas were originally split into two different groups: subdivision areas and FEMA floodplain areas. FNI has worked with City staff to further subdivide these groups into (1) local infrastructure improvements, (2) local infrastructure improvements adjacent to creek, (3) buyouts adjacent to creek, and (4) channel improvements. These can be ultimately broken out or combined with various elements of each priority project area as needed to make the best use of available funding.

Table 1. Priority Project Areas

ID	Priority Project Area	Description
A	Ranchettes 2 and 3 - Central	Local infrastructure improvements
B	Ranchettes 2 and 3 - East	Local infrastructure improvements
C	Ranchettes 2 and 3 - West	Local infrastructure improvements
D	Ranchettes 4 - North	Local infrastructure improvements
E	Ranchettes 4 - South A	Local infrastructure improvements
F	Ranchettes 4 - South B	Local infrastructure improvements
G	Ranchettes 6 and 6A - North B	Local infrastructure improvements
H	Ranchettes 6 and 6A - North A	Local infrastructure improvements adjacent to creek
I1	Block House Creek (Park Channel)	Channel improvements
I2	Block House Creek (FEMA Acquisitions)	Buyouts adjacent to creek
I3	Block House Creek (Extend Channel)	Channel and local infrastructure improvements
J	Ranchettes 6 and 6A - South A	Local infrastructure improvements adjacent to creek
K	Ranchettes 6 and 6A - South B	Local infrastructure improvements
L	Riviera - Northwest	Local infrastructure improvements
M	Riviera - East	Local infrastructure improvements
N	Riviera - Southwest	Local infrastructure improvements
O	Cluck Creek - Upper	Channel improvements
P	Cluck Creek - Lower	Channel improvements
Q	Deer Run	Local infrastructure improvements
R	Spanish Oak Creek	Channel improvements

ID	Project Name
A	Ranchettes 2 and 3 - Central
B	Ranchettes 2 and 3 - East
C	Ranchettes 2 and 3 - West
D	Ranchettes 4 - North
E	Ranchettes 4 - South A
F	Ranchettes 4 - South B
G	Ranchettes 6 and 6A - North B
H	Ranchettes 6 and 6A - North A
I	Block House Creek (FEMA)
J	Ranchettes 6 and 6A - South A
K	Ranchettes 6 and 6A - South B
L	Riviera - Northwest
M	Riviera - East
N	Riviera - Southwest
O	Cluck Creek - Upper (FEMA)
P	Cluck Creek - Lower (FEMA)
Q	Deer Run
R	Spanish Oak Creek (FEMA)

Legend



January 2019

The proposed improvements were not based on detailed engineering analysis or design. Rather they are based on field visits, review of existing data, and limited modeling and calculations. Each project cost includes additional engineering costs to perform field investigations and to develop the final design.

Ranchettes 2 and 3 is comprised of priority project areas **A, B, and C**: Central, East, and West. These are all local infrastructure improvements where the road will be updated with mill and overlay with ribbon curb and an appropriately-sized drainage swale on one side.

Ranchettes 4 is comprised of priority project areas **D, E, and F**: North, South A, and South B. This is also a local infrastructure improvements project where the road will be updated with ribbon curb and a drainage swale on one side.

Ranchettes 6 and 6A North is comprised of priority project areas **G and H**: North A and North B. North B is a local infrastructure improvements project with a drainage swale on one side of the road and between roads to interconnect the parallel drainage swales. North A is a local infrastructure improvement project adjacent to a creek. There will be drainage swales on one side of the road that outfall into Block House Creek.

Block House Creek, priority project area **I**, is a phased channelization project with buyouts and local infrastructure improvements. The first part (**I1**) consists of channelization through Peggy Garner Park. In October 2018, the City applied for FEMA funding through the Hazard Mitigation Grant Program (HMGP). The next part (**I2**) consists of the acquisition of several homes adjacent to the creek. The acquisitions will be necessary for a limited number of homes immediately adjacent to the creek for which there are no realistically feasible mitigation alternatives. The third part (**I3**) extends the park channelization upstream past Peach Tree Lane, Cypress Lane, and Sumac Lane, demolishing these three low water crossings and replacing one with a bridge over the channel.

Ranchettes 6 and 6A South is comprised of priority project areas **J and K**: South A and South B. These are both local infrastructure improvements projects with drainage swales on each side of the road.

Riviera is comprised of priority project areas **L, M, and N**: Northwest, East, and Southwest. These local infrastructure improvements include a drainage swale on one side of the road and includes several outfalls into the floodplain.

Cluck Creek is comprised of priority project areas **O and P**: Upper and Lower, both channel improvements projects. The natural channels will be re-graded to better contain stormwater runoff.

Deer Run, priority project area **Q**, is a local infrastructure improvements project that consists of adding underground storm drain with associated inlets to collect street drainage.

Spanish Oak Creek, priority project area **R**, is a channel improvements project to reduce flood risk with increased channel capacity.

2.3 OPINION OF PROBABLE COSTS

An opinion of probable cost was developed for each priority project area based on initial cost estimates from previous studies and updates made by FNI as part of this study. These are summarized in Table 2 below. The full opinions of probable costs are provided in Appendix B.

Each project cost is broken down into three categories: Drainage/Erosion for construction costs directly related to the stormwater elements of the project, Streets for related roadway construction costs, and Utilities for conceptual utility relocation costs that may also be required. The Streets and Drainage/Erosion categories include their own subtotals for mobilization (10%), contingency (30%), inspection (3.5%), final engineering design and geotechnical services (12%), and survey/SUE (7%). Environmental permitting and easement and property acquisition are categorized with the Drainage/Erosion costs. Each priority project area can be broken up into a series of smaller projects to address implementation constraints such as funding availability.

All unit prices are in 2019 dollars and are based on recent bid tabulations and FNI's experience with projects with similar design, construction, permitting, and maintenance elements. Costs for ongoing operations and maintenance are not included. The 30% contingency was included in each estimate due to the preliminary nature of the design because no survey, detailed hydrologic/hydraulic modeling, geotechnical, or structural services have been performed to date. FNI recommends a detailed study and/or alternatives analysis be performed before proceeding with final design for each project in order to vet each project scope and/or value engineer the final design.

Land acquisition easement costs were based on an average 17% increase from the costs in the 2010 study. Unit costs and real estate negotiation fees are based on a conservative estimate provided by City staff and modified based on recommendations from Langford Community Management Services, Inc. and reviewed by City staff. Land acquisition area was assumed based on project limits; existing easements may reduce this cost.

Table 2: Opinion of Probable Costs

ID	Project Name	Cost Breakdown			Total Cost (Streets, Drainage, and Utilities)	Total Cost (Streets and Drainage)*
		Streets	Drainage	Utilities		
A	Ranchettes 2 and 3 - Central	\$ 1,611,900	\$ 1,980,500	\$ 404,300	\$ 3,996,800	\$ 3,592,400
B	Ranchettes 2 and 3 - East	\$ 342,600	\$ 180,900	\$ 60,000	\$ 583,500	\$ 523,500
C	Ranchettes 2 and 3 - West	\$ 720,400	\$ 488,000	\$ 142,100	\$ 1,350,500	\$ 1,208,400
D	Ranchettes 4 - North	\$ 944,000	\$ 660,300	\$ 187,600	\$ 1,792,000	\$ 1,604,300
E	Ranchettes 4 - South A	\$ 754,300	\$ 512,700	\$ 154,700	\$ 1,421,700	\$ 1,267,000
F	Ranchettes 4 - South B	\$ 586,000	\$ 373,900	\$ 116,400	\$ 1,076,300	\$ 959,900
G	Ranchettes 6 and 6A - North B	\$ 1,335,300	\$ 1,179,900	\$ 302,500	\$ 2,817,700	\$ 2,515,200
H	Ranchettes 6 and 6A - North A	\$ 383,600	\$ 203,600	\$ 72,300	\$ 659,500	\$ 587,100
I1	Block House Creek (Park Channel)	\$ -	\$ 818,000	\$ -	\$ 818,000	\$ 818,000
I2	Block House Creek (FEMA Acquisitions)	\$ -	\$ 672,586	\$ -	\$ 672,600	\$ 672,600
I3	Block House Creek (Extend Channel)	\$ 1,385,500	\$ 1,373,100	\$ 280,100	\$ 3,038,700	\$ 2,758,600
J	Ranchettes 6 and 6A - South A	\$ 1,683,600	\$ 729,600	\$ 297,400	\$ 2,710,700	\$ 2,413,300
K	Ranchettes 6 and 6A - South B	\$ 1,633,600	\$ 791,700	\$ 313,100	\$ 2,738,400	\$ 2,425,300
L	Riviera - Northwest	\$ 535,700	\$ 555,800	\$ 127,100	\$ 1,218,600	\$ 1,091,500
M	Riviera - East	\$ 1,403,700	\$ 986,300	\$ 282,500	\$ 2,672,500	\$ 2,390,000
N	Riviera - Southwest	\$ 530,600	\$ 503,700	\$ 124,800	\$ 1,159,100	\$ 1,034,300
O	Cluck Creek - Upper	\$ 285,500	\$ 848,000	\$ 138,000	\$ 1,271,500	\$ 1,133,500
P	Cluck Creek - Lower	\$ 656,000	\$ 2,536,800	\$ 376,700	\$ 3,569,400	\$ 3,192,700
Q	Deer Run	\$ 436,100	\$ 757,900	\$ 138,900	\$ 1,332,900	\$ 1,194,000
R	Spanish Oak Creek	\$ 409,000	\$ 787,200	\$ 166,400	\$ 1,362,600	\$ 1,196,200
Summary of Probable Project Costs:		\$ 15,637,400	\$ 16,940,486	\$ 3,684,900	\$ 36,263,000	\$32,577,800
* The final column excludes utility costs, which are anticipated to be funded separately by the City's utility fund.						

3.0 PROJECT AREA PRIORITIZATION

The project areas were prioritized using a ranking system which assesses the relative severity of the identified drainage issues using weighted criteria that is used to assign a score to each project. The project area ranking is a guide that, along with many other factors such as cost, funding availability, grant potential and interdependency on other projects in the area, will aid the staff in making recommendations to the City Council for project implementation. The project ranking will assist City staff in making recommendations regarding annual funding priorities and future bond packages. Future projects can also use the same following process to compare against the projects in the master plan.

3.1 CRITERIA IDENTIFICATION

FNI first collaborated with City staff to develop thorough descriptions and scoring metrics for each category. The goal was to establish measures that provide consistent results and that would allow future projects to be added to the master plan if needed.

Each criterion is scored from zero to ten, where ten represents the worst-case score. FNI developed quantifiable measures and unique scoring metrics for each criterion. Table 9 contains the overall city-wide scoring of priority project areas and Table 10 contains the final ranking once all the ranking steps are finalized.

- A. Emergency Services/Public Safety –This category considers how emergency services help citizens during major rainfall events. Flooded areas can lead to restricted access to houses. Evacuations are anticipated when localized flooding around a house is too high for a citizen to get out of the structure to safety. It also takes the velocity of the water into account as that affects the accessibility of the houses as well.

Table 3. Emergency Services/Public Safety Criterion

Impact to emergency services and citizen safety	Points
No access to houses or evacuations anticipated	10
Limited access to houses, high flow velocity	7
Limited access to houses, low flow velocity	5
Detours required for emergency responders	4
None of the above	0

- B. Flooding of Habitable Structures – This category considers the number of currently developed structures and properties that are subject to potential flooding/erosion or flood/erosion related damage.

Table 4. Flooding of Habitable Structures Criterion

Nature of flood risk (per individual house)	Points
Documented structural damage	10
Documented property damage	8
Houses in the floodway	6
Houses in the floodplain	4
Property in the floodplain	2
None of the above	0

- C. Cross-Flow/Localized Flooding – Cross-flow/localized flooding represents situations during rainfall events where stormwater is not contained within the right-of-way or drainage easement. A typical example includes stormwater exceeding roadside ditch capacity, then sheet flowing between houses to flood the next roadside ditch. This causes local flooding concerns between houses and the overall network of ditches.

Table 5. Cross-Flow/Localized Flooding Criterion

Nature of flooding	Points
Frequent cross-flows from ROW to private property	10
Limited ROW capacity, multiple lots flooded >6"	7
Some ROW capacity, localized property flooding	4
None of the above	0

- D. Roadway Flooding – During significant rainfall events, stormwater may temporarily overtop roadways or sidewalks. This can gradually undermine the roadway, erode soils, and cause maintenance problems that will require additional upkeep. This roadway maintenance criterion is distinct from the public safety and cross-flow criteria noted previously. The roadway flooding scoring metrics are based upon the depth of overtopping flow as determined by HEC-RAS models or GIS desktop studies.

Table 6. Roadway Flooding Criterion

Level of flooding	Points
Severe roadway flooding (>18")	10
Moderate roadway flooding (6-18")	7
Shallow roadway flooding (<6")	4
None of the above	0

3.2 PAIRWISE CRITERIA WEIGHTING

After establishing the scoring criteria, FNI weighted each criterion to determine its importance relative to the other criteria. This was accomplished through the “pairwise” process, which provides a simple, customizable, and rational framework to structure the ranking process. FNI created a pairwise comparison table, which allowed the criteria to be weighed against each other individually. Each criterion was compared to the other criteria to see if it was more or less important based on a scale of 1 to 3. A weight of 3 means that the first criterion is considered more important, a weight of 2 means that the criteria are of the same importance, and a weight of 1 means that the first criterion is considered less important.

For example, it was determined that emergency services and public safety was more important than limiting the flooding of habitable structures, due to the need for first responders to access houses for evacuations, medical assistance, etc. Therefore, emergency services and public safety received a weight of 3 in that comparison.

The results of the pairwise exercise are provided in Table 7.

Table 7. Pairwise Criteria Weighting

Criteria		1	2	3	4	Total Weight
		Emergency Services/ Public Safety	Flooding of Habitable Structures	Cross-Flow/ Localized Flooding	Roadway Flooding	
1	Emergency Services/Public Safety		3	3	3	9
2	Flooding of Habitable Structures	1		3	3	7
3	Cross-Flow/Localized Flooding	1	1		3	5
4	Roadway Flooding	1	1	1		3

If ROW is more important than COLUMN: 3

If ROW is equally important as COLUMN: 2

If ROW is less important than COLUMN: 1

The final weights are shown in Table 7. The sum of each criterion's weight along its row then determines the overall weight of that criterion in the final priority project area scoring table provided in Table 9. The general reasoning behind the selection of the final criteria weights is outlined below.

- Emergency services and public safety was considered more important than all other criteria. It is important that emergency vehicles and first responders have access to houses and can perform evacuations if needed.
- Flooding of habitable structures was considered second most important. This category directly relates to public safety for individual houses. The public safety concerns coupled with the cost of property damage makes this a highly ranked criterion.
- Cross-flow and localized flooding was considered more important than roadway flooding, as localized flooding impacts private property while roadway flooding is in the ROW.
- Roadway flooding was considered the least important criterion. However, roadway flooding is a safety and transportation issue as it cuts off roads from the rest of the local transportation system and from citizens potentially trapped in their houses.

3.3 PRIORITY PROJECT AREA SCORING AND RANKING

For the flooding of habitable structures criterion, more detailed scoring is necessary. Each “nature of flood risk” is assigned the weight from the scoring metrics table. For each weighted nature of risk, the appropriate number of affected properties was tallied up based on a GIS desktop study and City data from previous flooding events like Tropical Storm Hermine. Each total is then multiplied by the weight to equal the total score. To avoid excessive skewing of the scores due to large outliers, the high-scoring projects were capped at the top quartile. Finally, the scores were scaled to a zero to ten scale.

Table 8. Flooding of Habitable Structures—Scoring

Priority Project Area	Yards in floodplain	Houses in floodplain	Houses in floodway	Property w/ docum. damages	Houses w/ docum. damages	Total score	Total score, capped	Total score, 0-10
<i>Scoring Metric Weight</i>	2	4	6	8	10			
Ranchettes 2 and 3 - Central				5		40	40	5.8
Ranchettes 2 and 3 - East				3		24	24	3.5
Ranchettes 2 and 3 - West	0					0	0	0.0
Ranchettes 4 - North				3		24	24	3.5
Ranchettes 4 - South A				1		8	8	1.2
Ranchettes 4 - South B	0					0	0	0.0
Ranchettes 6 and 6A - North B	17	8				66	66	9.6
Ranchettes 6 and 6A - North A	2	7			1	42	42	6.1
Block House Creek (Park Channel)	9	2		7	9	172	68.5	10.0
Block House Creek (FEMA Acquisitions)								
Block House Creek (Extend Channel)								
Ranchettes 6 and 6A - South A	8	16		24	18	452	68.5	10.0
Ranchettes 6 and 6A - South B						0	0	0.0
Riviera - Northwest	4			3	1	42	42	6.1
Riviera - East	4	1		2		28	28	4.1
Riviera - Southwest	2					4	4	0.6
Cluck Creek - Upper	20	5		1		68	68	9.9
Cluck Creek - Lower	19			1	9	136	68.5	10.0
Deer Run						0	0	0.0
Spanish Oak Creek	10	7	2		1	70	68.5	10.0

Top quartile 68.5

The remaining criteria were scored according to their respective scoring metrics (Section 3.1). Each criterion’s score was then multiplied by the corresponding weights (Section 3.2) to develop a total score for each priority project area. The projects were then ranked according to the total score. The final scoring and ranking of each priority project area is summarized in the tables and figure below.



Table 9. Priority Project Area Scoring

Priority Project Area		Flooding of Habitable Structures		Cross Flow or Localized Flooding	Emergency Services/ Public Safety	Roadway Flooding	Total Score	Rank
		Total	Scaled					
Criteria Weight			7.0	5.0	9.0	3.0		
A	Ranchettes 2 and 3 - Central	40	5.8	10	7	4	166	5
B	Ranchettes 2 and 3 - East	24	3.5	7	7	4	135	10
C	Ranchettes 2 and 3 - West	0	0.0	4	4	4	68	14
D	Ranchettes 4 - North	24	3.5	4	0	4	57	16
E	Ranchettes 4 - South A	8	1.2	10	7	4	133	11
F	Ranchettes 4 - South B	0	0.0	4	0	4	32	18
G	Ranchettes 6 and 6A - North B	66	9.6	4	4	4	135	8
H	Ranchettes 6 and 6A - North A	42	6.1	4	4	7	120	12
I1	Block House Creek (Park Channel)	172	10.0	10	10	10	240	1
I2	Block House Creek (FEMA Acquisitions)							
I3	Block House Creek (Extend Channel)							
J	Ranchettes 6 and 6A - South A	452	10.0	10	10	7	231	2
K	Ranchettes 6 and 6A - South B	0	0.0	4	4	4	68	15
L	Riviera - Northwest	42	6.1	7	5	4	135	9
M	Riviera - East	28	4.1	10	7	4	154	6
N	Riviera - Southwest	4	0.6	4	4	4	72	13
O	Cluck Creek - Upper	68	9.9	4	5	4	146	7
P	Cluck Creek - Lower	136	10.0	10	7	7	204	3
Q	Deer Run	0	0.0	0	4	4	48	17
R	Spanish Oak Creek	70	10.0	10	7	7	204	4

Table 10: Priority Project Area Ranking and Costs

Rank	Total Score	Priority Project Area		Cost (Streets and Drainage)*
1	240	I1	Block House Creek (Park Channel)	\$ 818,000
		I2	Block House Creek (FEMA Acquisitions)	\$ 672,600
		I3	Block House Creek (Extend Channel)	\$ 2,758,600
2	231	J	Ranchettes 6 and 6A - South A	\$ 2,413,300
3	204	P	Cluck Creek - Lower	\$ 3,192,700
4	204	R	Spanish Oak Creek	\$ 1,196,200
5	166	A	Ranchettes 2 and 3 - Central	\$ 3,592,400
6	154	M	Riviera - East	\$ 2,390,000
7	146	O	Cluck Creek - Upper	\$ 1,133,500
8	135	G	Ranchettes 6 and 6A - North B	\$ 2,515,200
9	135	L	Riviera - Northwest	\$ 1,091,500
10	135	B	Ranchettes 2 and 3 - East	\$ 523,500
11	133	E	Ranchettes 4 - South A	\$ 1,267,000
12	120	H	Ranchettes 6 and 6A - North A	\$ 587,100
13	72	N	Riviera - Southwest	\$ 1,034,300
14	68	C	Ranchettes 2 and 3 - West	\$ 1,208,400
15	68	K	Ranchettes 6 and 6A - South B	\$ 2,425,300
16	57	D	Ranchettes 4 - North	\$ 1,604,300
17	48	Q	Deer Run	\$ 1,194,000
18	32	F	Ranchettes 4 - South B	\$ 959,900
Total				\$32,577,800

* This column excludes utility costs, which are anticipated to be funded separately by the City's utility fund.

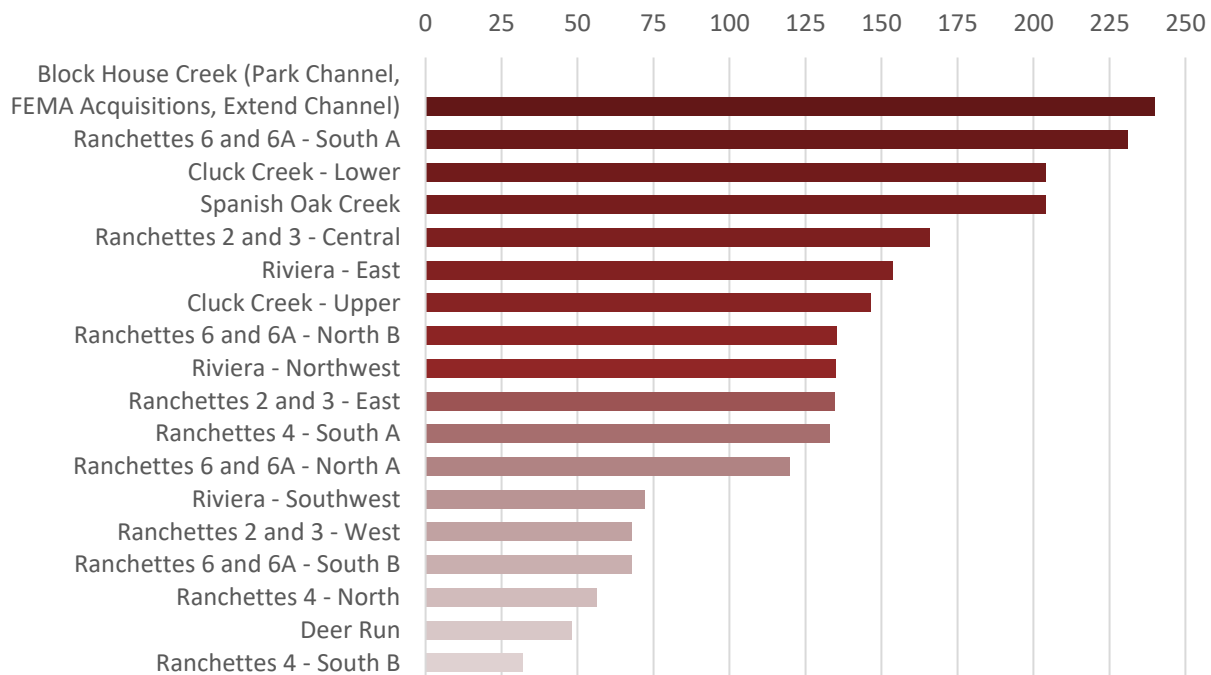


Figure 2. Priority Project Area Ranking

The ranking is not intended to provide the City with the exact order in which projects must be designed and constructed; but rather it is a tool that, along with many other factors such as cost, funding availability, grant potential, and interdependency on other projects, will aid staff in making recommendations to the City Council for funding and implementation. This tool provides City staff with a repeatable method for scoring and comparing stormwater projects.

4.0 CAPITAL PROJECTS FUNDING EVALUATION AND PUBLIC OUTREACH

In June 2017, FNI provided City staff with an evaluation of a wide range of funding mechanisms for the City to obtain new funding or leverage existing funding for the proposed priority project areas. The evaluation included general obligation bonds, cost-sharing, state and federal grants, 4B sales tax, establishment of special districts, a stormwater utility fee, a general fund, certificates of obligation, a community development corporation, the Texas Capital Fund Infrastructure Program, the Clean Water State Revolving Fund, and a sales tax reallocation election made possible by the recent passage of H.B. 157 in the Texas state legislature. The City chose to pursue a sales tax reallocation election as the primary method of funding a new Stormwater Program. This method, which was ultimately approved by the voters in May of 2018, authorizes an allocation of 25% of the revenues from the Type A Economic Development Corporation to the City's General Fund for stormwater drainage and related street facility improvements. Additionally, prior to the election, the City Council had approved funding for seven full time maintenance positions and one full time MS4 coordinator position in the FY2017 and FY2019 annual City budgets.

The City also employed a robust public outreach process in the development of the Stormwater Program. Between fall 2017 and spring 2018 the City held 5 public open houses and also conducted an online survey. Four of the meetings were designed to get feedback from citizens throughout the City on the stormwater project and sales tax reallocation plan information. This was done by dividing the City into 4 areas and mailing invitations to each resident in the areas in which the meeting was being held. The fifth meeting was held in spring 2018 shortly before the sales tax reallocation proposition election.

The City also chose to apply for Hazard Mitigation Grant Program (HMGP) funding for Block House Creek channelization. If the application is accepted, the City may receive up to 75% matching funds from FEMA for limited channel excavation along Block House Creek within Peggy Garner Park. The HMGP application was submitted in October 2018 through the Texas Department of Emergency Management (TDEM) and

is currently under review by FEMA. HMGP funding is anticipated to be awarded in spring or summer of 2019.

5.0 SUMMARY

This stormwater master plan provides prioritization and recommendations for the 18 identified priority project areas. These priority project areas have been identified and studied for many years as having flooding issues needing mitigation. Recommendations in this master plan will be used to update the City of Cedar Park's Capital Improvement Plan.

The project areas were developed at a conceptual level based on previous studies and vast historical knowledge and experience of City staff with flooding issues. FNI then refined the project concepts and prepared cost estimates to prepare for prioritization. These projects were then ranked based on four pairwise-weighted criteria: impacts to emergency services and public safety, flooding of habitable structures, cross flow/localized flooding, and roadway flooding. The resulting priority project area ranking serves as a budgeting and implementation tool for the City's Stormwater Program.

As part of the master plan, FNI also researched approaches for funding the City's Stormwater Program. In May 2018, voters passed Proposition A to establish a steady source of funding for the City's Stormwater Program. FNI recommends that the City leverage these local funds to pursue cost-sharing opportunities with state and federal agencies and make the most of available funding.

APPENDIX A ONE-PAGE SUMMARIES



City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Block House Creek – Park Channel

Project ID Ranking

11

1

Project Type

Channel Improvements

Project Description

Mitigation project with channelization through a local park. A Hazard Mitigation Grant Program (HMFP) application for this project was sent to Texas Division of Emergency Management in October 2018.

Project Scoring

Weight Score

Flooding of Habitable Structures	7	10
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	10
Roadway Flooding	3	10

Total Score 240

Project Cost Summary

Streets

Drainage \$818,000

Utilities

Total Cost \$818,000





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Block House Creek – FEMA Acquisitions

Project ID Ranking

12

1

Project Type

Buyouts adjacent to creek

Project Description

FEMA mitigation project consisting of the acquisition of 5 homes. This is required to continue channelization upstream.

Project Scoring

Weight

Score

Flooding of Habitable Structures	7	10
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	10
Roadway Flooding	3	10

Total Score 240

Project Cost Summary

Streets

Drainage \$672,586

Utilities

Total Cost \$672,586





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Block House Creek – Extend Channel

Project ID Ranking

13

1

Project Type

Channel and local infrastructure improvements

Project Description

Mitigation project that is an extension on the channelization done in Phase 1. This will require buyouts of several homes and demolition of three low water crossings. This will also consist of the reconstruction of Peach Tree Lane low water crossing into a bridge.

Project Scoring

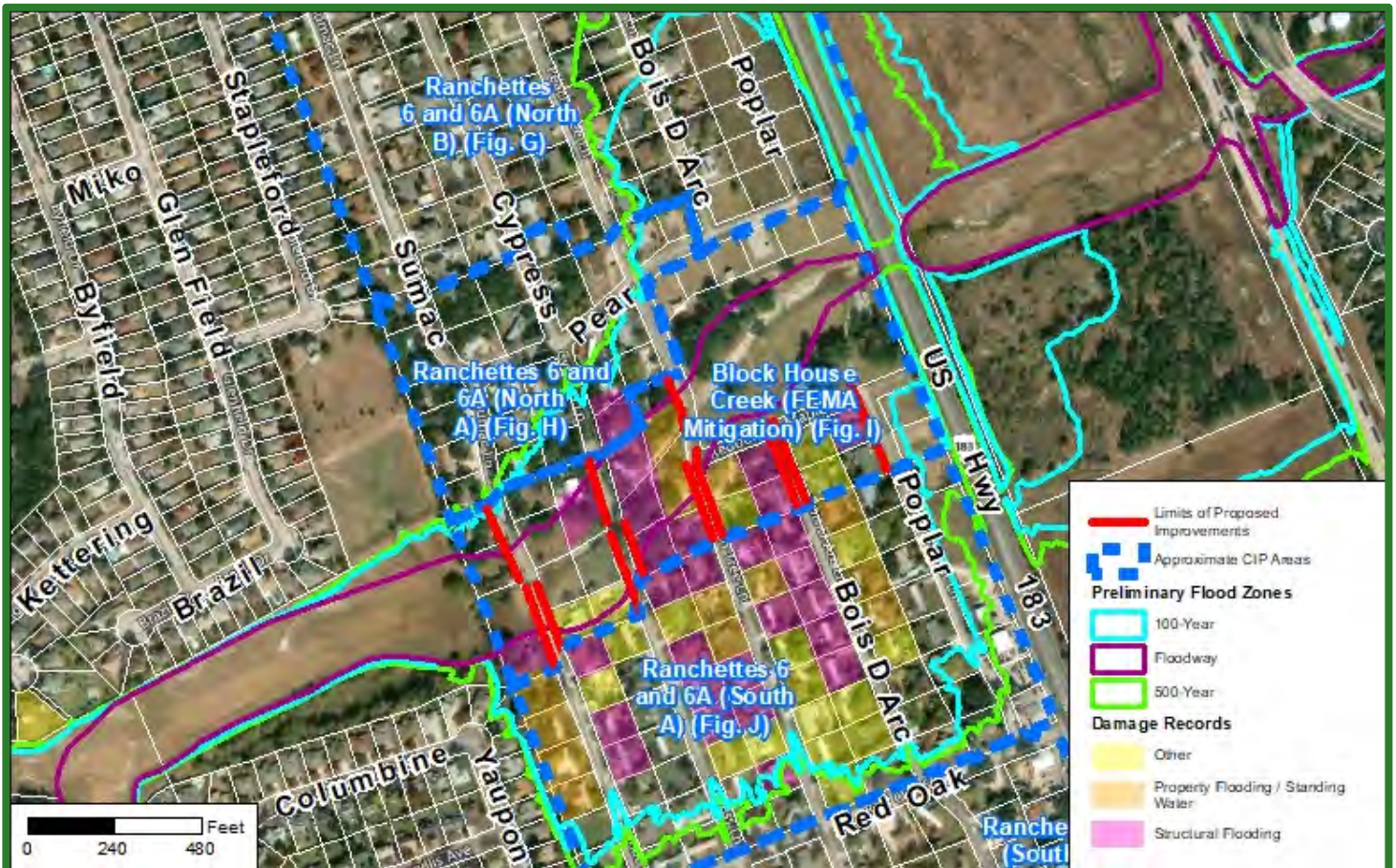
Weight Score

Flooding of Habitable Structures	7	10
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	10
Roadway Flooding	3	10

Total Score 240

Project Cost Summary

Streets	\$1,385,500
Drainage	\$1,373,100
Utilities	\$280,100
Total Cost	\$3,038,700





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 6 and 6A – South A

Project ID Ranking

J

2

Project Type

Local infrastructure improvements adjacent to creek

Project Description

Part of the Ranchettes 6 and 6A South project area.
 Add drainage swales on each side of the road.

Project Scoring

Weight

Score

Flooding of Habitable Structures	7	10
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	10
Roadway Flooding	3	7

Total Score 231

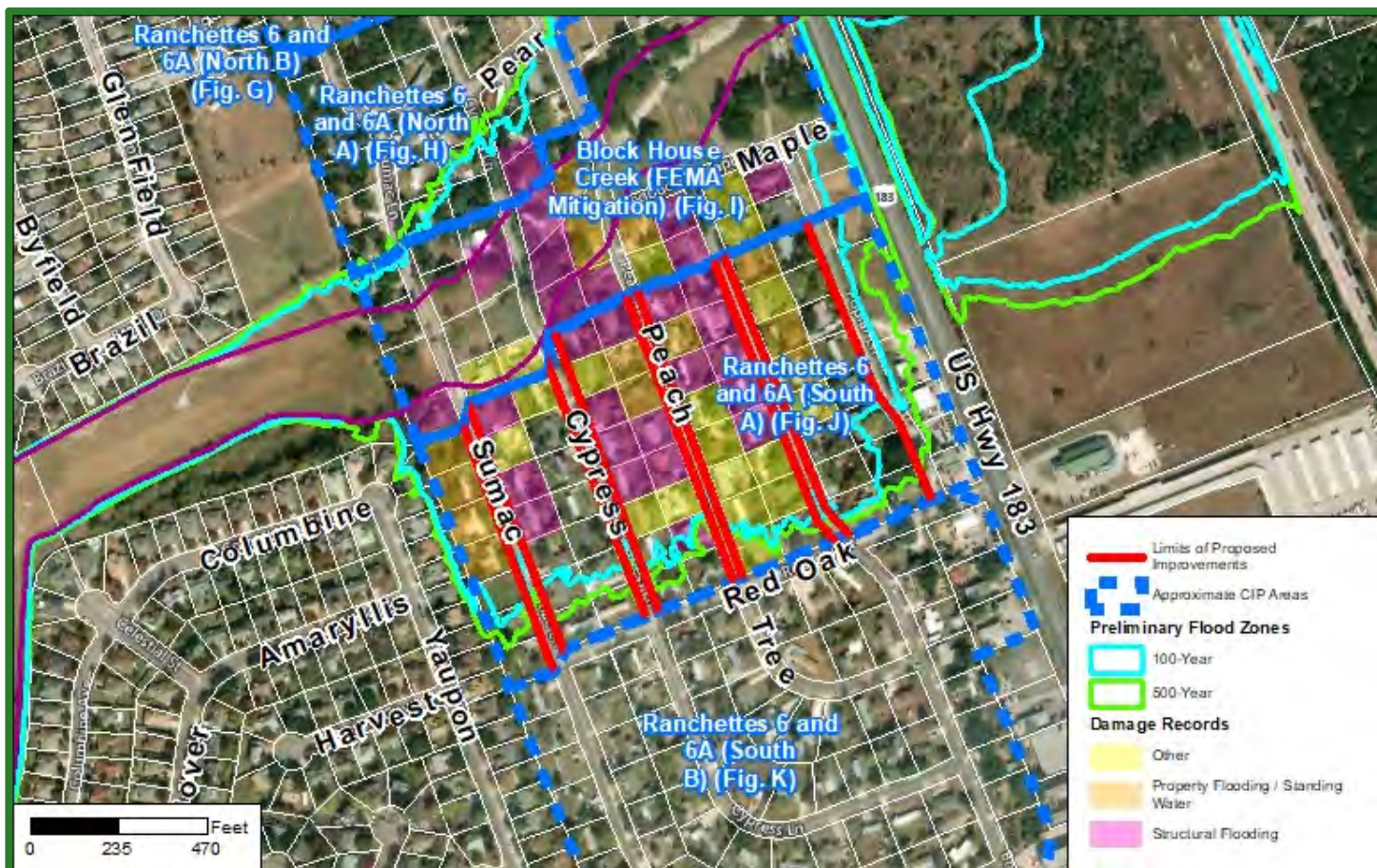
Project Cost Summary

Streets \$1,683,600

Drainage \$729,600

Utilities \$297,400

Total Cost \$2,710,700





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Cluck Creek – Lower

Project ID Ranking

P

3

Project Type

Channel improvements

Project Description

Part of the Cluck Creek project area. Natural channel will be re-graded to better contain stormwater runoff.

Project Scoring

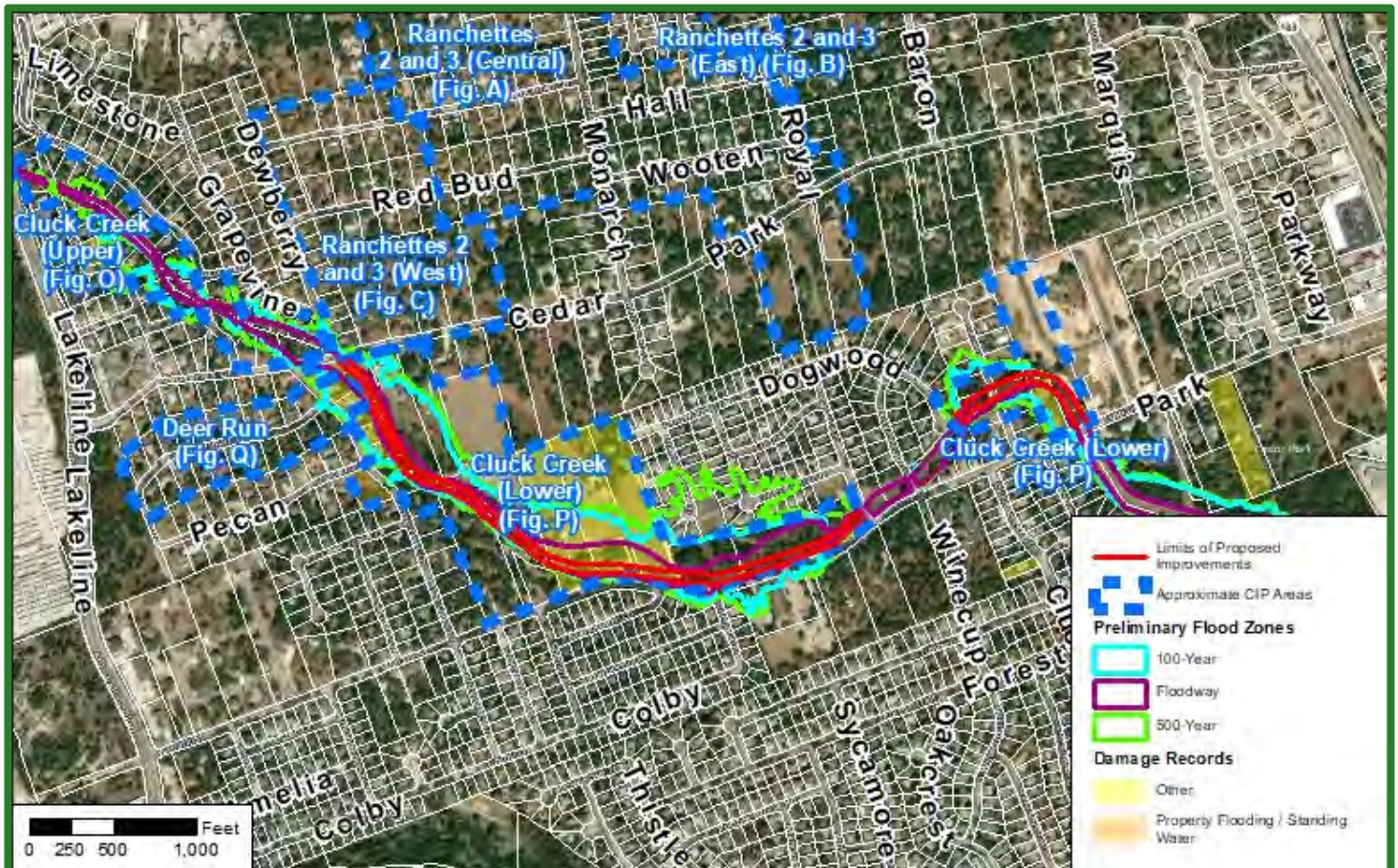
Weight Score

Flooding of Habitable Structures	7	10
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	7
Roadway Flooding	3	7

Total Score 204

Project Cost Summary

Streets	\$656,000
Drainage	\$2,536,800
Utilities	\$376,700
Total Cost	\$3,569,400





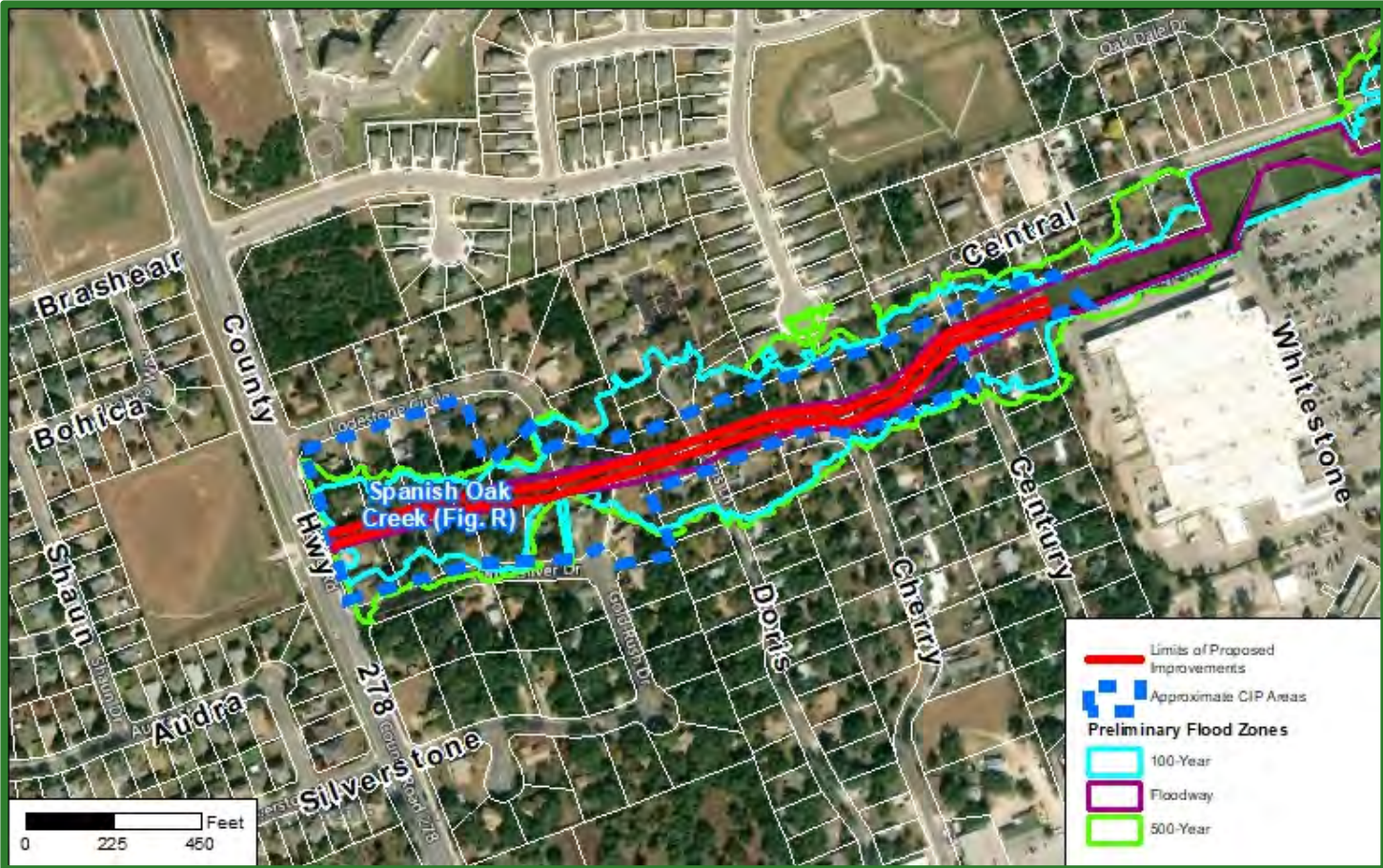
City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Spanish Oak Creek

Project ID	Ranking
R	4

Project Type
Channel improvements
Project Description
Reduce flood risk with increased channel capacity.

Project Scoring	Weight	Score
Flooding of Habitable Structures	7	10
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	7
Roadway Flooding	3	7
Total Score		204

Project Cost Summary	
Streets	\$409,000
Drainage	\$787,200
Utilities	\$166,400
Total Cost	\$1,362,600





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 2 and 3 - Central

Project ID Ranking

A

5

Project Type

Local infrastructure improvements

Project Description

Part of the entire Ranchettes 2 and 3 project area. Mill and overlay existing roadway with a ribbon curb on both sides. Add drainage swale on one side of the updated road.

Project Scoring

Weight

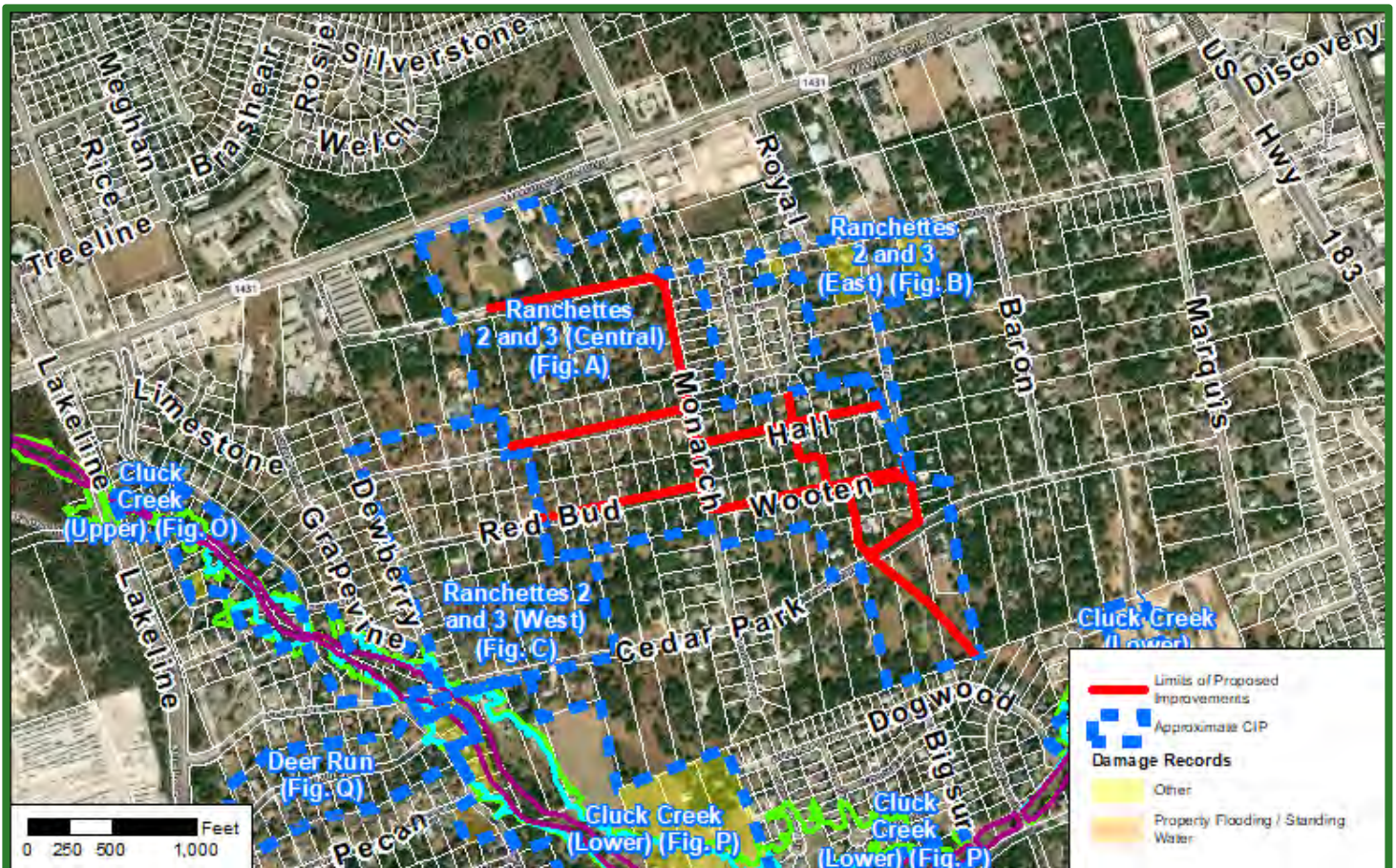
Score

Flooding of Habitable Structures	7	5.8
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	7
Roadway Flooding	3	4

Total Score 166

Project Cost Summary

Streets	\$1,611,900
Drainage	\$1,980,500
Utilities	\$404,300
Total Cost	\$3,996,800





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Riviera – East

Project ID Ranking

M

6

Project Type

Local infrastructure improvements

Project Description

Part of the Riviera project area. Add a drainage swale on one side of the road and several outfalls into the floodplain.

Project Scoring

Weight

Score

Flooding of Habitable Structures	7	4.1
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	7
Roadway Flooding	3	4

Total Score 154

Project Cost Summary

Streets	\$1,403,700
Drainage	\$986,300
Utilities	\$282,500
Total Cost	\$2,672,500



City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Cluck Creek – Upper

Project ID	Ranking
0	7

Project Type

Channel improvements

Project Description

Part of the Cluck Creek project area. Natural channel will be re-graded to better contain stormwater runoff.

Project Scoring

Project Scoring	Weight	Score
Flooding of Habitable Structures	7	9.9
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	5
Roadway Flooding	3	4
Total Score		146

Project Cost Summary

Streets	\$285,500
Drainage	\$848,000
Utilities	\$138,000
Total Cost	\$1,271,500





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 6 and 6A – North B

Project ID Ranking

G

8

Project Type

Local infrastructure improvements

Project Description

Part of the Ranchettes 6 and 6A North project area. Add a drainage swale on one side of the road and between roads to interconnect the parallel drainage swales.

Project Scoring

Weight Score

Flooding of Habitable Structures	7	9.6
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	4
Roadway Flooding	3	4

Total Score 135

Project Cost Summary

Streets	\$1,335,300
Drainage	\$1,179,900
Utilities	\$302,500
Total Cost	\$2,817,700





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Riviera – Northwest

Project ID Ranking

L

9

Project Type

Local infrastructure improvements

Project Description

Part of the Riviera project area. Add a drainage swale on one side of the road and several outfalls into the floodplain.

Project Scoring

Weight

Score

Flooding of Habitable Structures

7

6.1

Cross Flow/Localized Flooding

5

7

Emergency Services/Public Safety

9

5

Roadway Flooding

3

4

Total Score

135

Project Cost Summary

Streets

\$535,700

Drainage

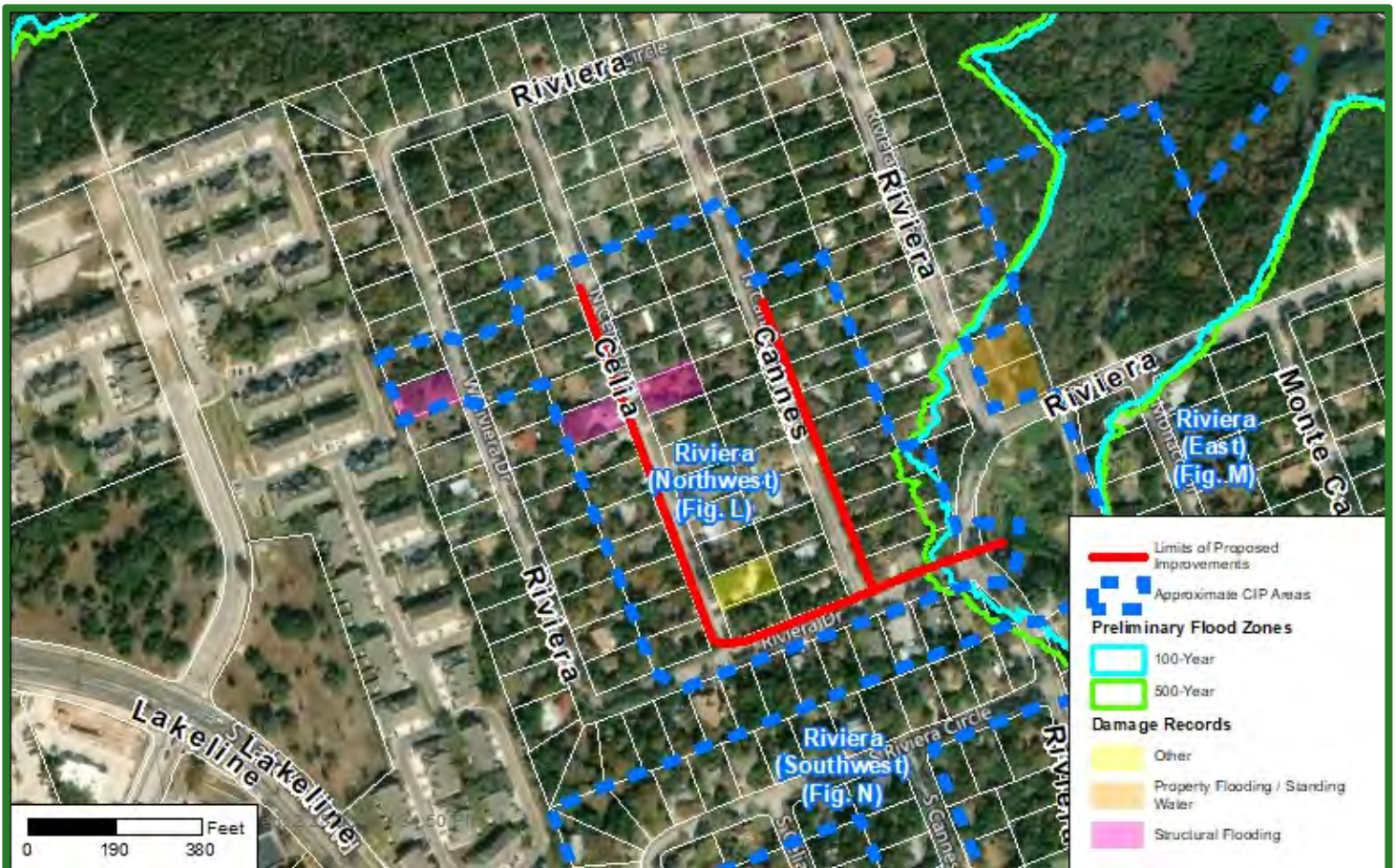
\$555,800

Utilities

\$127,100

Total Cost

\$1,218,600





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 2 and 3 - East

Project ID Ranking

B

10

Project Type

Local infrastructure improvements

Project Description

Part of the entire Ranchettes 2 and 3 project area. Mill and overlay existing roadway with a ribbon curb on both sides. Add drainage swale on one side of the updated road.

Project Scoring

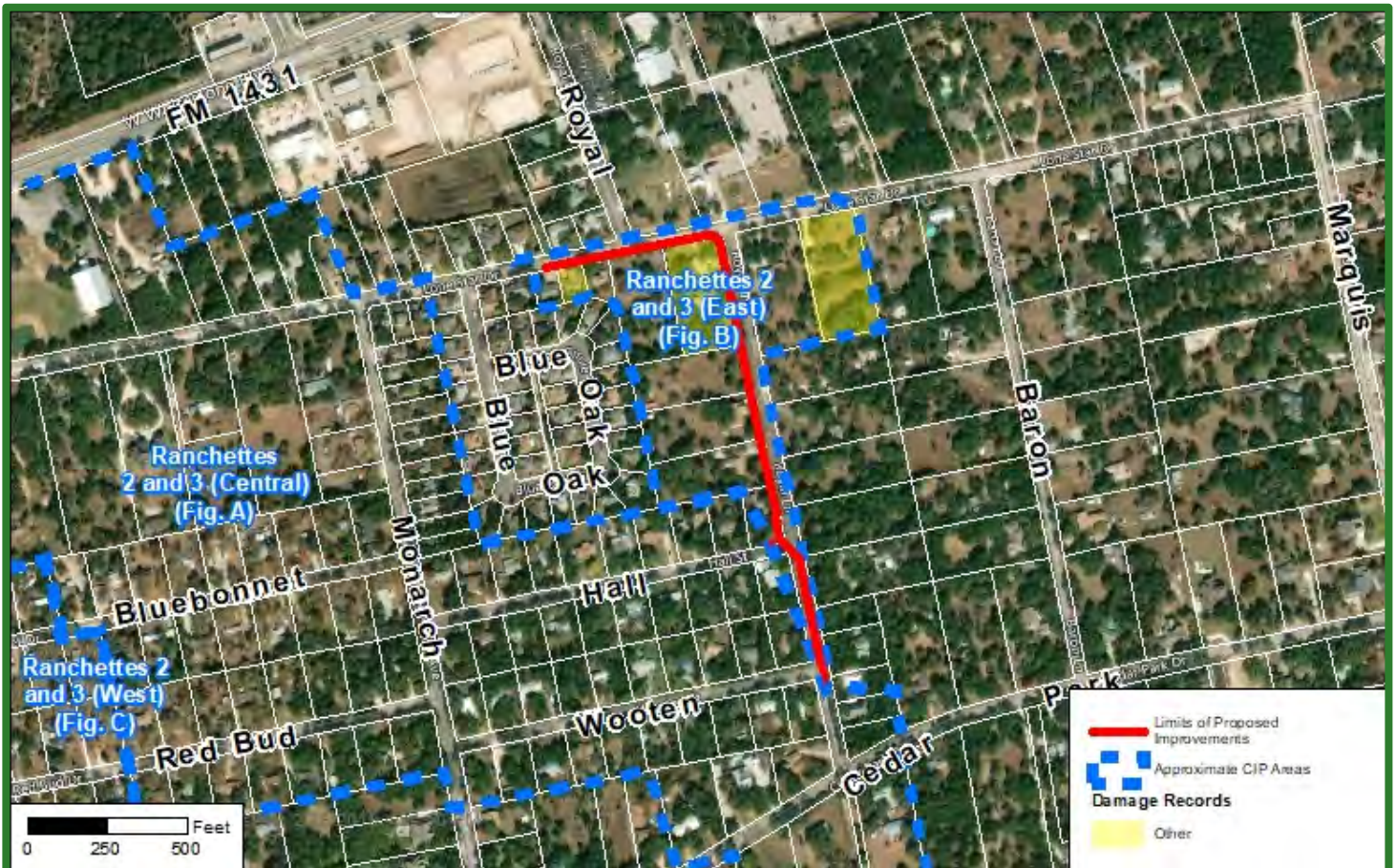
Weight Score

Flooding of Habitable Structures	7	3.5
Cross Flow/Localized Flooding	5	7
Emergency Services/Public Safety	9	7
Roadway Flooding	3	4

Total Score 135

Project Cost Summary

Streets	\$342,600
Drainage	\$180,900
Utilities	\$60,000
Total Cost	\$583,500





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 4 – South A

Project ID Ranking

E

11

Project Type

Local infrastructure improvements

Project Description

Part of the entire Ranchettes 4 project area. Road will be updated with ribbon curb and a drainage swale on one side.

Project Scoring

Weight Score

Flooding of Habitable Structures	7	1.2
Cross Flow/Localized Flooding	5	10
Emergency Services/Public Safety	9	7
Roadway Flooding	3	4

Total Score 133

Project Cost Summary

Streets	\$754,300
Drainage	\$512,700
Utilities	\$154,700
Total Cost	\$1,421,700





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 6 and 6A – North A

Project ID Ranking

H

12

Project Type

Local infrastructure improvements adjacent to creek

Project Description

Part of the Ranchettes 6 and 6A North project area. Add a drainage swale on one side of the road and between roads to interconnect the parallel drainage swales. North A is adjacent to a creek. There will be drainage swales on one side of the road that outfall into Block House Creek.

Project Scoring

Weight Score

Flooding of Habitable Structures	7	6.1
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	4
Roadway Flooding	3	7

Total Score 120

Project Cost Summary

Streets	\$383,600
Drainage	\$203,600
Utilities	\$72,300
Total Cost	\$659,500





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Riviera – Southwest

Project ID Ranking

N

13

Project Type

Local infrastructure improvements

Project Description

Part of the Riviera project area. Add a drainage swale on one side of the road and several outfalls into the floodplain.

Project Scoring

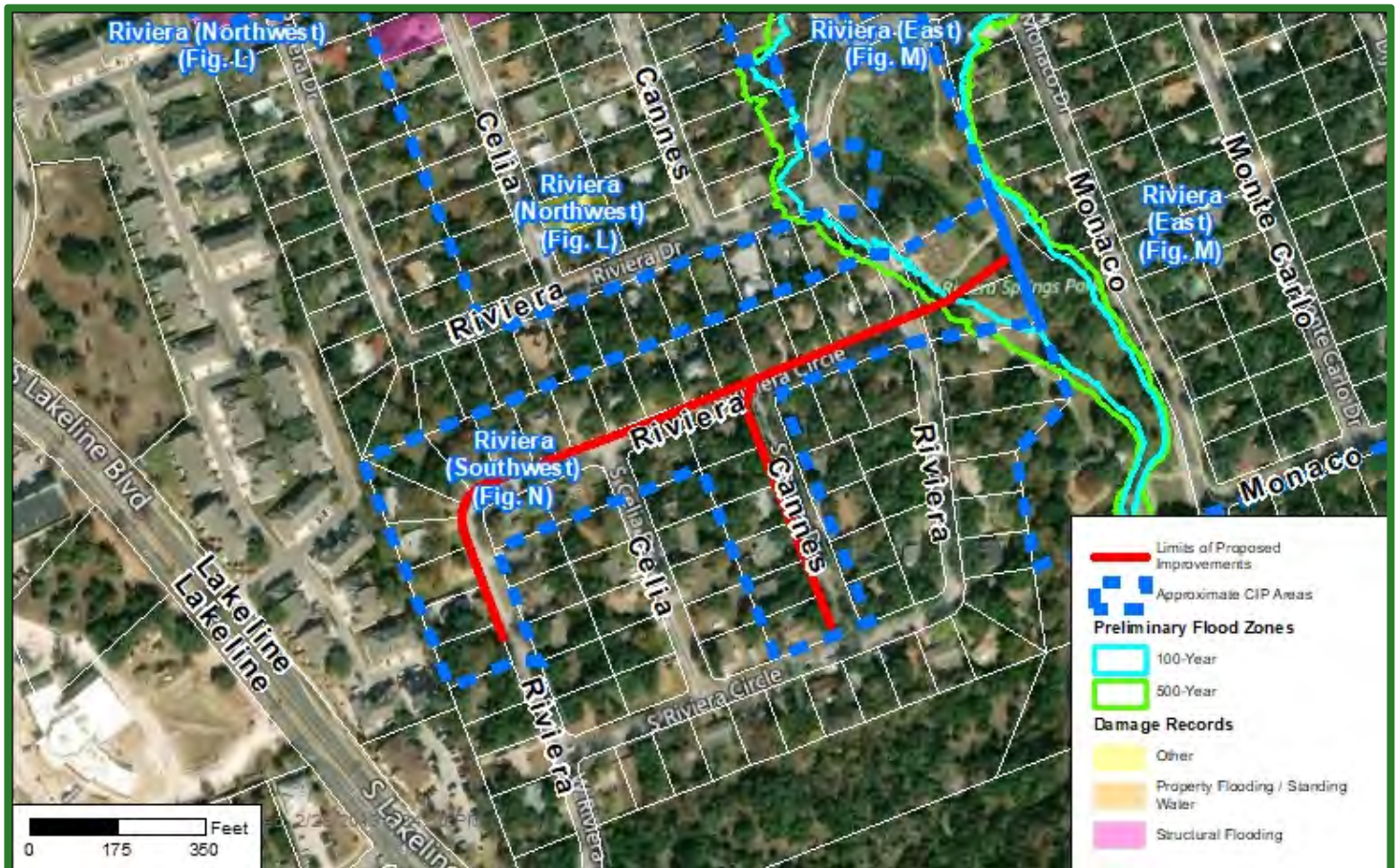
Weight Score

Flooding of Habitable Structures	7	0.6
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	4
Roadway Flooding	3	4

Total Score 72

Project Cost Summary

Streets	\$530,600
Drainage	\$503,700
Utilities	\$124,800
Total Cost	\$1,159,100





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 2 and 3 - West

Project ID Ranking

C

14

Project Type

Local infrastructure improvements

Project Description

Part of the entire Ranchettes 2 and 3 project area. Mill and overlay existing roadway with a ribbon curb on both sides. Add drainage swale on one side of the updated road.

Project Scoring

Weight

Score

Flooding of Habitable Structures

7

0

Cross Flow/Localized Flooding

5

4

Emergency Services/Public Safety

9

4

Roadway Flooding

3

4

Total Score

68

Project Cost Summary

Streets

\$720,400

Drainage

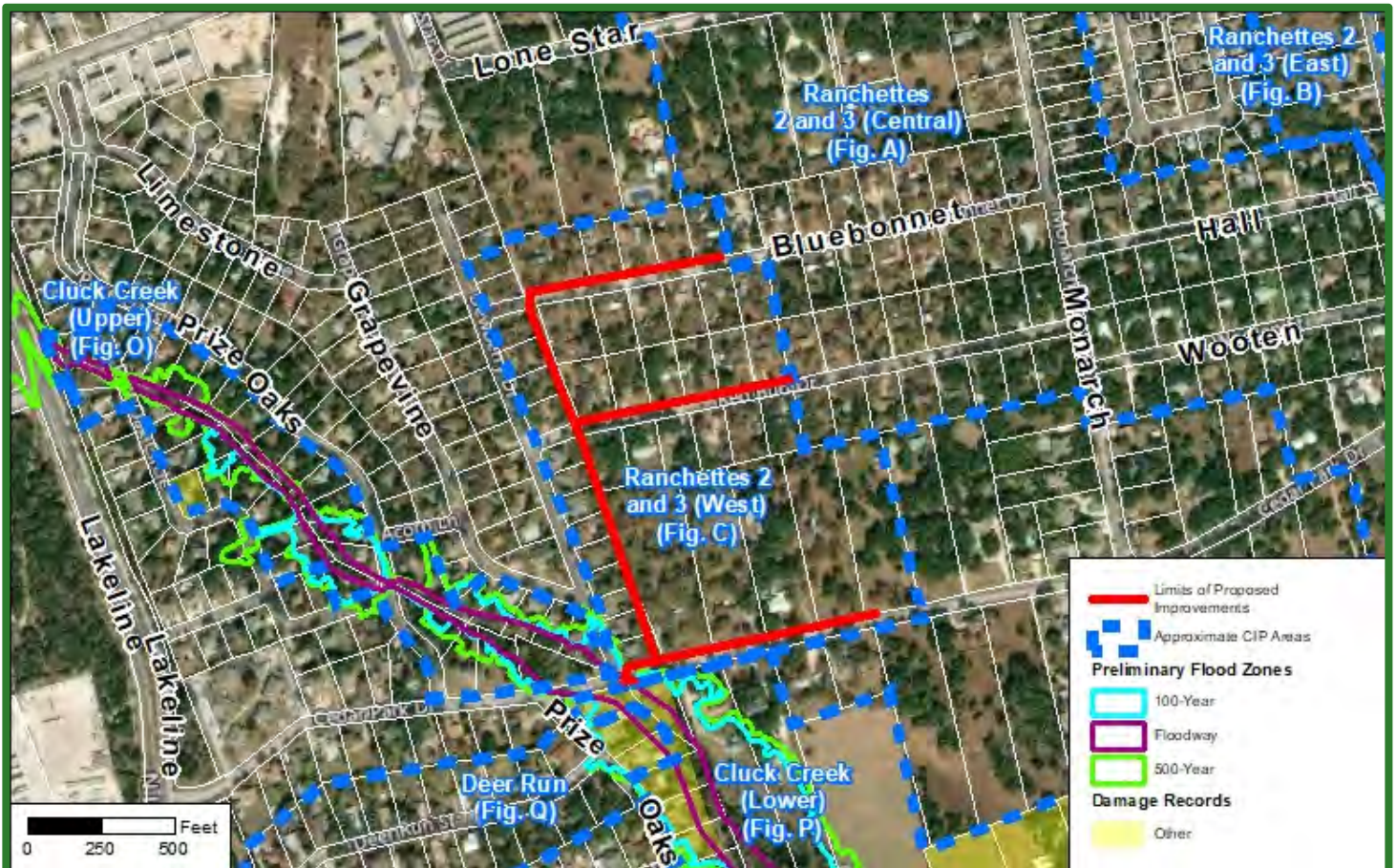
\$488,000

Utilities

\$142,100

Total Cost

\$1,350,500





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 6 and 6A – South B

Project ID Ranking

K

15

Project Type

Local infrastructure improvements

Project Description

Part of the Ranchettes 6 and 6A South project area.
 Add drainage swales on each side of the road.

Project Scoring

Weight Score

Flooding of Habitable Structures	7	0
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	4
Roadway Flooding	3	4

Total Score 68

Project Cost Summary

Streets	\$1,633,600
Drainage	\$791,700
Utilities	\$313,100
Total Cost	\$2,738,400





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 4 - North

Project ID Ranking

D

16

Project Type

Local infrastructure improvements

Project Description

Part of the entire Ranchettes 4 project area. Road will be updated with ribbon curb and a drainage swale on one side.

Project Scoring

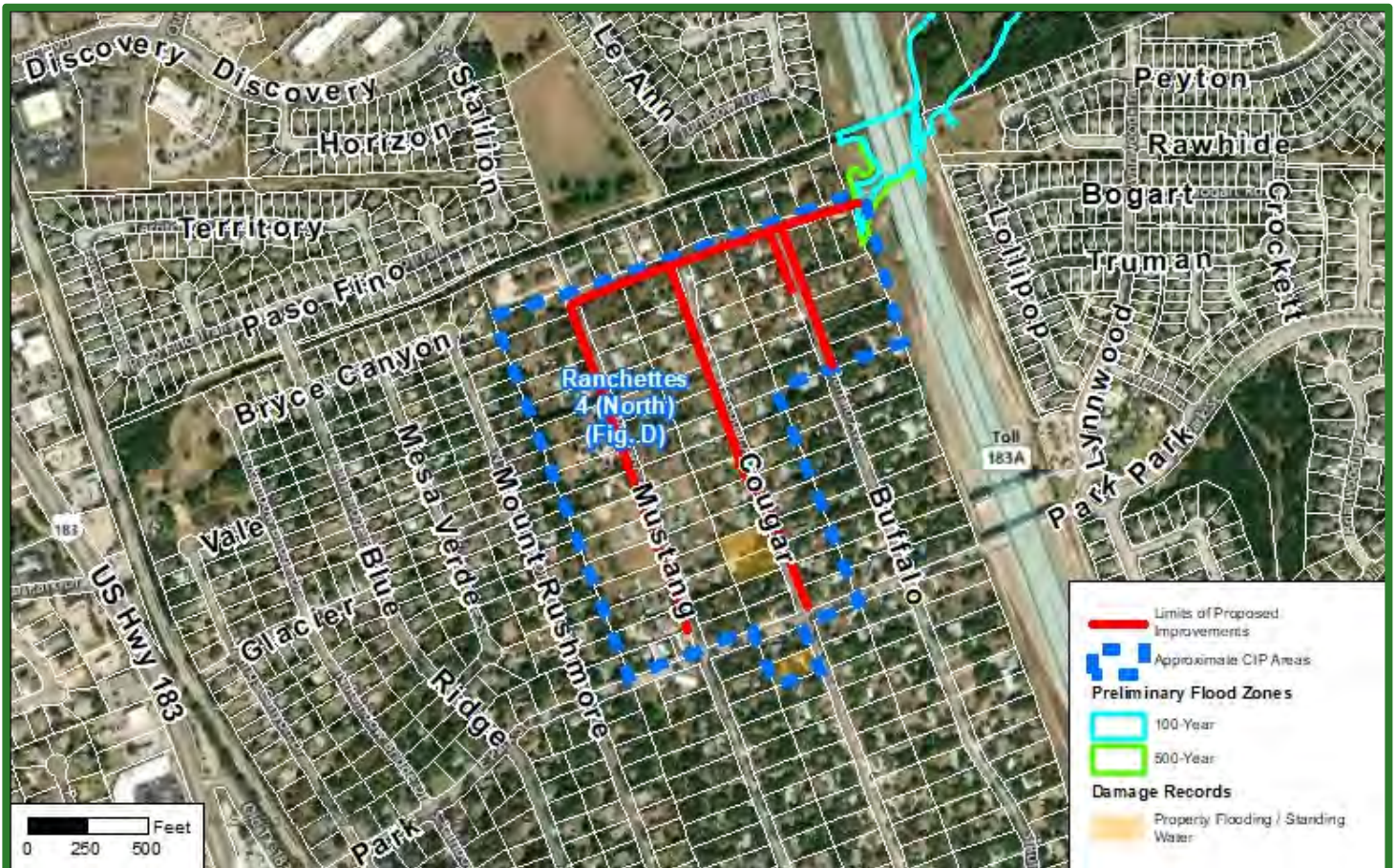
Weight Score

Flooding of Habitable Structures	7	3.5
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	0
Roadway Flooding	3	4

Total Score 57

Project Cost Summary

Streets	\$944,000
Drainage	\$660,300
Utilities	\$187,600
Total Cost	\$1,792,000





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Deer Run

Project ID Ranking

Q

17

Project Type

Local infrastructure improvements

Project Description

Add underground storm drain with associated inlets to collect the street drainage.

Project Scoring

Weight Score

Flooding of Habitable Structures	7	0
Cross Flow/Localized Flooding	5	0
Emergency Services/Public Safety	9	4
Roadway Flooding	3	4

Total Score 48

Project Cost Summary

Streets	\$436,100
Drainage	\$757,900
Utilities	\$138,900
Total Cost	\$1,332,900





City of Cedar Park Stormwater Master Plan
Project Summary Sheet
Ranchettes 4 – South B

Project ID Ranking

F

18

Project Type

Local infrastructure improvements

Project Description

Part of the entire Ranchettes 4 project area. Road will be updated with ribbon curb and a drainage swale on one side.

Project Scoring

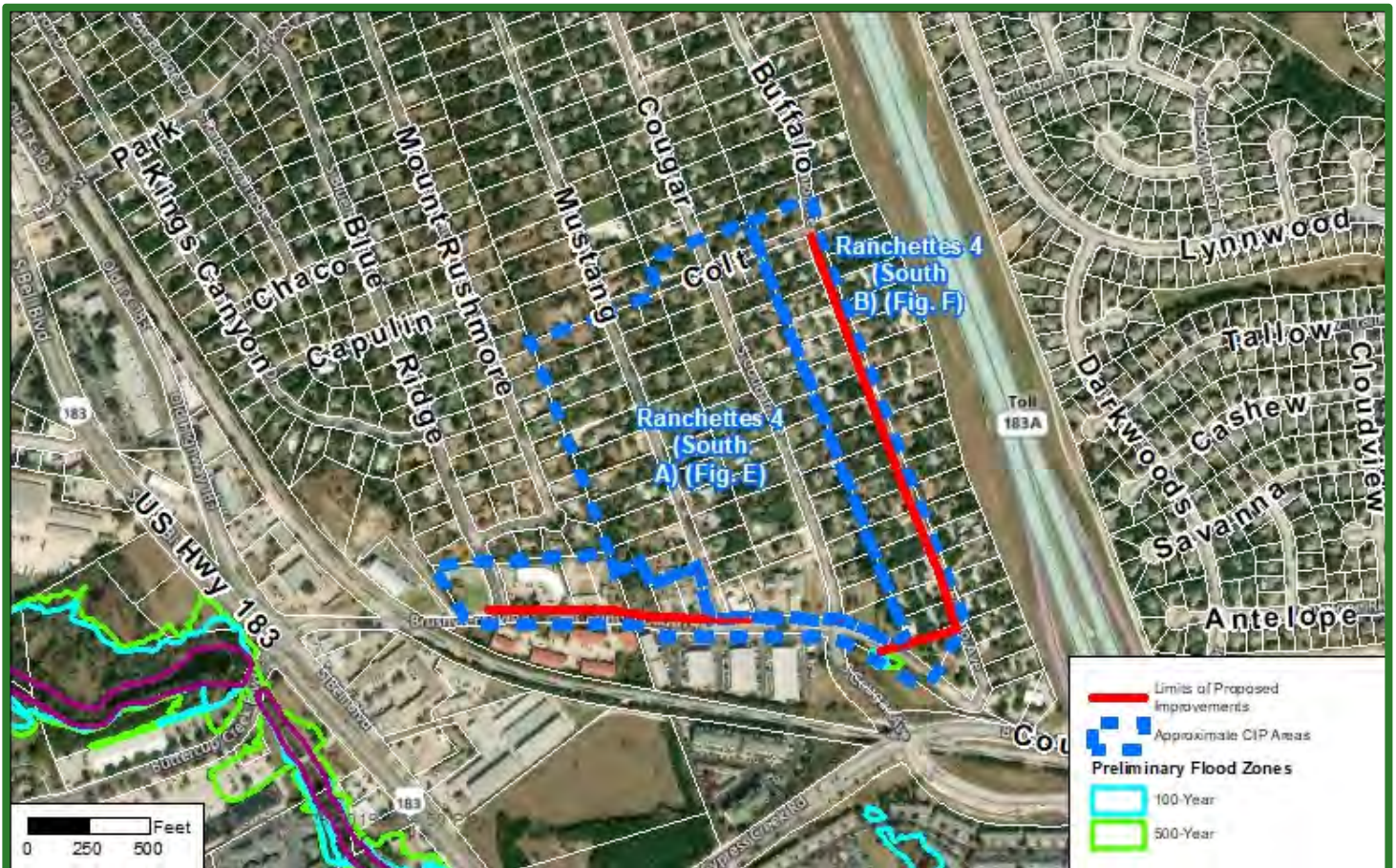
Weight Score

Flooding of Habitable Structures	7	0
Cross Flow/Localized Flooding	5	4
Emergency Services/Public Safety	9	0
Roadway Flooding	3	4

Total Score 32

Project Cost Summary

Streets	\$586,000
Drainage	\$373,900
Utilities	\$116,400
Total Cost	\$1,076,300



APPENDIX B
OPINION OF PROBABLE COSTS



Innovative approaches
Practical results
Outstanding service

Ranchoettes 2 and 3 - Central

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	2008	CY	\$ 25	\$ 50,208
	Incidental Lot Construction	46	EA	\$ 1,000	\$ 46,000
	Limestone/Flex Base	2008	SY	\$ 15	\$ 30,125
	Mailbox Adjustment	46	EA	\$ 300	\$ 13,800
	Mill & Overlay	20829	SY	\$ 15	\$ 312,433
	Pavement Marking	6695	LF	\$ 2	\$ 13,390
	Ribbon Curb	13390	LF	\$ 20	\$ 267,800
	Subgrade Prep	2008	SY	\$ 15	\$ 30,125
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	46	EA	\$ 3,500	\$ 161,000
	Subtotal				\$ 939,882
	Mobilization			10%	\$ 93,988
	Contingency			30%	\$ 281,965
	Subtotal				\$ 1,315,834
	Inspection Services			3.5%	\$ 46,054
	Engineering/Geotech			12%	\$ 157,900
	Survey/SUE			7%	\$ 92,108
	Total Street Costs				\$ 1,611,897
DRAINAGE & EROSION	Area Inlet 4'x4'	4	EA	\$ 5,500	\$ 22,000
	Driveway Culverts 18"	46	EA	\$ 800	\$ 36,800
	RCB 2'x1'	110	LF	\$ 160	\$ 17,600
	RCB 3'x2'	150	LF	\$ 190	\$ 28,500
	RCB 4'x2'	3100	LF	\$ 200	\$ 620,000
	RCB 4'x2.5'	70	LF	\$ 210	\$ 14,700
	RCB 5'x3'	0	LF	\$ 260	\$ -
	RCP 18"	185	LF	\$ 55	\$ 10,175
	RCP 36"		LF	\$ 130	\$ -
	RCP/RCB Headwall	16	EA	\$ 7,000	\$ 112,000
	Storm Manholes	2	EA	\$ 5,500	\$ 11,000
	Swale Grading	2416	CY	\$ 19	\$ 48,197
	Trench Safety	3615	LF	\$ 3	\$ 10,845
	Reveg Disturbed Areas	8858	SY	\$ 5	\$ 44,289
	Silt Fence	7510	LF	\$ 3	\$ 22,530
	SCE	1	EA	\$ 3,000	\$ 3,000
	Subtotal				\$ 1,001,636
	Mobilization			10%	\$ 100,164
	Contingency			30%	\$ 300,491
	Subtotal				\$ 1,402,290
	Inspection Services			3.5%	\$ 49,080
	Engineering/Geotech			12%	\$ 168,275
	Survey/SUE			7%	\$ 98,160
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 252,720
	Total Drainage Costs				\$ 1,980,525
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 3,592,422
	Cost per Property in Project Area	No. of Properties:		46	\$ 78,096
UTILITIES	Private Utility Relocations			10%	\$ 359,242
	Service Adjustment	46	EA	\$ 850	\$ 39,100
	W, WW Manhole Adjustment	3	EA	\$ 2,000	\$ 6,000
	Total Utility Relocation Costs				\$ 404,342



Innovative approaches
Practical results
Outstanding service

Ranchettes 2 and 3 - East

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	40	CY	\$ 25	\$ 1,000
	Incidental Lot Construction	9	EA	\$ 1,000	\$ 9,000
	Limestone/Flex Base	60	SY	\$ 15	\$ 900
	Mailbox Adjustment	9	EA	\$ 300	\$ 2,700
	Mill & Overlay	4869	SY	\$ 15	\$ 73,033
	Pavement Marking	1565	LF	\$ 2	\$ 3,130
	Ribbon Curb	3130	LF	\$ 20	\$ 62,600
	Subgrade Prep	60	SY	\$ 15	\$ 900
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	9	EA	\$ 3,500	\$ 31,500
	Subtotal				\$ 199,763
	Mobilization			10%	\$ 19,976
	Contingency			30%	\$ 59,929
	Subtotal				\$ 279,669
	Inspection Services			3.5%	\$ 9,788
	Engineering/Geotech			12%	\$ 33,560
	Survey/SUE			7%	\$ 19,577
	Total Street Costs				\$ 342,594
DRAINAGE & EROSION	Area Inlet 4'x4'	0	EA	\$ 5,500	\$ -
	Driveway Culverts 18"	9	EA	\$ 800	\$ 7,200
	RCB 2'x1'	180	LF	\$ 160	\$ 28,800
	RCB 3'x2'	0	LF	\$ 190	\$ -
	RCB 4'x2'	0	LF	\$ 200	\$ -
	RCB 4'x2.5'	0	LF	\$ 210	\$ -
	RCB 5'x3'	0	LF	\$ 260	\$ -
	RCP 18"	0	LF	\$ 55	\$ -
	RCP 36"		LF	\$ 130	\$ -
	RCP/RCB Headwall	2	EA	\$ 7,000	\$ 14,000
	Storm Manholes	0	EA	\$ 5,500	\$ -
	Swale Grading	243	CY	\$ 19	\$ 4,625
	Trench Safety	180	LF	\$ 3	\$ 540
	Reveg Disturbed Areas	1217	SY	\$ 5	\$ 6,086
	Silt Fence	1565	LF	\$ 3	\$ 4,695
	SCE	1	EA	\$ 3,000	\$ 3,000
	Subtotal				\$ 68,947
	Mobilization			10%	\$ 6,895
	Contingency			30%	\$ 20,684
	Subtotal				\$ 96,525
	Inspection Services			3.5%	\$ 3,378
	Engineering/Geotech			12%	\$ 11,583
	Survey/SUE			7%	\$ 6,757
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 52,650
	Total Drainage Costs				\$ 180,893
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 523,487
	Cost per Property in Project Area	No. of Properties:		9	\$ 58,165
UTILITIES	Private Utility Relocations			10%	\$ 52,349
	Service Adjustment	9	EA	\$ 850	\$ 7,650
	W, WW Manhole Adjustment	0	EA	\$ 2,000	\$ -
	Total Utility Relocation Costs				\$ 59,999



Innovative approaches
Practical results
Outstanding service

Ranchettes 2 and 3 - West

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	551	CY	\$ 25	\$ 13,778
	Incidental Lot Construction	25	EA	\$ 1,000	\$ 25,000
	Limestone/Flex Base	413	SY	\$ 15	\$ 6,200
	Mailbox Adjustment	25	EA	\$ 300	\$ 7,500
	Mill & Overlay	9084	SY	\$ 15	\$ 136,267
	Pavement Marking	2920	LF	\$ 2	\$ 5,840
	Ribbon Curb	5840	LF	\$ 20	\$ 116,800
	Subgrade Prep	413	SY	\$ 15	\$ 6,200
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	25	EA	\$ 3,500	\$ 87,500
	Subtotal				\$ 420,084
	Mobilization			10%	\$ 42,008
	Contingency			30%	\$ 126,025
	Subtotal				\$ 588,118
	Inspection Services			3.5%	\$ 20,584
	Engineering/Geotech			12%	\$ 70,574
	Survey/SUE			7%	\$ 41,168
	Total Street Costs				\$ 720,445
DRAINAGE & EROSION	Area Inlet 4'x4'		EA	\$ 5,500	\$ -
	Driveway Culverts 18"	25	EA	\$ 800	\$ 20,000
	RCB 2'x1'	0	LF	\$ 160	\$ -
	RCB 3'x2'	0	LF	\$ 190	\$ -
	RCB 4'x2'	500	LF	\$ 200	\$ 100,000
	RCB 4'x2.5'	0	LF	\$ 210	\$ -
	RCB 5'x3'	120	LF	\$ 260	\$ 31,200
	RCP 18"	0	LF	\$ 55	\$ -
	RCP 36"		LF	\$ 130	\$ -
	RCP/RCB Headwall	4	EA	\$ 7,000	\$ 28,000
	Storm Manholes	0	EA	\$ 5,500	\$ -
	Swale Grading	679	CY	\$ 19	\$ 13,536
	Trench Safety	620	LF	\$ 3	\$ 1,860
	Reveg Disturbed Areas	3009	SY	\$ 5	\$ 15,044
	Silt Fence	2920	LF	\$ 3	\$ 8,760
	SCE	1	EA	\$ 3,000	\$ 3,000
	Subtotal				\$ 221,401
	Mobilization			10%	\$ 22,140
	Contingency			30%	\$ 66,420
	Subtotal				\$ 309,961
	Inspection Services			3.5%	\$ 10,849
	Engineering/Geotech			12%	\$ 37,195
	Survey/SUE			7%	\$ 21,697
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 98,280
	Total Drainage Costs				\$ 487,983
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,208,427
	Cost per Property in Project Area	No. of Properties:		50	\$ 24,169
UTILITIES	Private Utility Relocations			10%	\$ 120,843
	Service Adjustment	25	EA	\$ 850	\$ 21,250
	W, WW Manhole Adjustment	0	EA	\$ 2,000	\$ -
	Total Utility Relocation Costs				\$ 142,093



Innovative approaches
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Ranchettes 4 - North

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	231	CY	\$ 25	\$ 5,778
	Incidental Lot Construction	32	EA	\$ 1,000	\$ 32,000
	Limestone/Flex Base	231	SY	\$ 15	\$ 3,467
	Mailbox Adjustment	32	EA	\$ 300	\$ 9,600
	Mill & Overlay	10889	SY	\$ 15	\$ 163,333
	Pavement Marking	4900	LF	\$ 2	\$ 9,800
	Ribbon Curb	9800	LF	\$ 20	\$ 196,000
	Subgrade Prep	231	SY	\$ 15	\$ 3,467
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	32	EA	\$ 3,500	\$ 112,000
	Subtotal				\$ 550,444
	Mobilization			10%	\$ 55,044
	Contingency			30%	\$ 165,133
	Subtotal				\$ 770,622
	Inspection Services			3.5%	\$ 26,972
	Engineering/Geotech			12%	\$ 92,475
	Survey/SUE			7%	\$ 53,944
	Total Street Costs				\$ 944,012
DRAINAGE & EROSION	Driveway Culverts 18"	32	EA	\$ 800	\$ 25,600
	RCP 18"	140	LF	\$ 55	\$ 7,700
	RCP 24"	100	LF	\$ 75	\$ 7,500
	RCP 36"	280	LF	\$ 130	\$ 36,400
	RCP/RCB Headwall	6	EA	\$ 7,000	\$ 42,000
	Rip Rap	50	LF	\$ 200	\$ 10,000
	Swale Grading	2292	CY	\$ 19	\$ 45,719
	Trench Safety	520	LF	\$ 3	\$ 1,560
	Reveg Disturbed Areas	7339	SY	\$ 5	\$ 36,694
	Silt Fence	4900	LF	\$ 3	\$ 14,700
	Temp Rock Berm	75	LF	\$ 30	\$ 2,250
	Subtotal				\$ 230,123
	Mobilization			10%	\$ 23,012
	Contingency			30%	\$ 69,037
	Subtotal				\$ 322,172
	Inspection Services			3.5%	\$ 11,276
	Engineering/Geotech			12%	\$ 38,661
	Survey/SUE			7%	\$ 22,552
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 255,645
	Total Drainage Costs				\$ 660,306
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,604,319
	Cost per Property in Project Area	No. of Properties:		32	\$ 50,135
UTIL	Private Utility Relocations			10%	\$ 160,432
	Service Adjustment	32	EA	\$ 850	\$ 27,200
	Total Utility Relocation Costs				\$ 187,632



Innovative approaches
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Ranchettes 4 - South A

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	160	CY	\$ 25	\$ 4,000
	Incidental Lot Construction	33	EA	\$ 1,000	\$ 33,000
	Limestone/Flex Base	160	SY	\$ 15	\$ 2,400
	Mailbox Adjustment	33	EA	\$ 300	\$ 9,900
	Mill & Overlay	7600	SY	\$ 15	\$ 114,000
	Pavement Marking	3420	LF	\$ 2	\$ 6,840
	Ribbon Curb	6840	LF	\$ 20	\$ 136,800
	Subgrade Prep	160	SY	\$ 15	\$ 2,400
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	33	EA	\$ 3,500	\$ 115,500
	Subtotal				\$ 439,840
	Mobilization			10%	\$ 43,984
	Contingency			30%	\$ 131,952
	Subtotal				\$ 615,776
	Inspection Services			3.5%	\$ 21,552
	Engineering/Geotech			12%	\$ 73,893
	Survey/SUE			7%	\$ 43,104
	Total Street Costs				\$ 754,326
DRAINAGE & EROSION	Driveway Culverts 18"	33	EA	\$ 800	\$ 26,400
	RCP 18"	0	LF	\$ 55	\$ -
	RCP 24"	240	LF	\$ 65	\$ 15,600
	RCP 36"	120	LF	\$ 130	\$ 15,600
	RCP/RCB Headwall	4	EA	\$ 7,000	\$ 28,000
	Rip Rap	50	LF	\$ 200	\$ 10,000
	Swale Grading	2476	CY	\$ 19	\$ 47,038
	Trench Safety	360	LF	\$ 3	\$ 1,080
	Reveg Disturbed Areas	6767	SY	\$ 5	\$ 33,833
	Silt Fence	3420	LF	\$ 3	\$ 10,260
	Temp Rock Berm	50	LF	\$ 25	\$ 1,250
	Subtotal				\$ 189,061
	Mobilization			10%	\$ 18,906
	Contingency			30%	\$ 56,718
	Subtotal				\$ 264,685
	Inspection Services			3.5%	\$ 9,264
	Engineering/Geotech			12%	\$ 31,762
	Survey/SUE			7%	\$ 18,528
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 178,425
	Total Drainage Costs				\$ 512,665
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,266,990
	Cost per Property in Project Area	No. of Properties:		33	\$ 38,394
UTIL	Private Utility Relocations			10%	\$ 126,699
	Service Adjustment	33	EA	\$ 850	\$ 28,050
	Total Utility Relocation Costs				\$ 154,749



Innovative approaches
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Ranchettes 4 - South B

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	284	CY	\$ 25	\$ 7,111
	Incidental Lot Construction	24	EA	\$ 1,000	\$ 24,000
	Limestone/Flex Base	284	SY	\$ 15	\$ 4,267
	Mailbox Adjustment	24	EA	\$ 300	\$ 7,200
	Mill & Overlay	5778	SY	\$ 15	\$ 86,667
	Pavement Marking	2600	LF	\$ 2	\$ 5,200
	Ribbon Curb	5200	LF	\$ 20	\$ 104,000
	Subgrade Prep	284	SY	\$ 15	\$ 4,267
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	24	EA	\$ 3,500	\$ 84,000
	Subtotal				\$ 341,711
	Mobilization			10%	\$ 34,171
	Contingency			30%	\$ 102,513
	Subtotal				\$ 478,396
	Inspection Services			3.5%	\$ 16,744
	Engineering/Geotech			12%	\$ 57,407
	Survey/SUE			7%	\$ 33,488
	Total Street Costs				\$ 586,035
DRAINAGE & EROSION	Driveway Culverts 18"	24	EA	\$ 800	\$ 19,200
	RCP 18"	0	LF	\$ 55	\$ -
	RCP 24"	640	LF	\$ 65	\$ 41,600
	RCP 36"	0	LF	\$ 130	\$ -
	RCP/RCB Headwall	2	EA	\$ 7,000	\$ 14,000
	Rip Rap	50	LF	\$ 200	\$ 10,000
	Swale Grading	1070	CY	\$ 19	\$ 20,338
	Trench Safety	640	LF	\$ 3	\$ 1,920
	Reveg Disturbed Areas	3389	SY	\$ 5	\$ 16,944
	Silt Fence	2600	LF	\$ 3	\$ 7,800
	Temp Rock Berm	50	LF	\$ 25	\$ 1,250
	Subtotal				\$ 133,052
	Mobilization			10%	\$ 13,305
	Contingency			30%	\$ 39,916
	Subtotal				\$ 186,273
	Inspection Services			3.5%	\$ 6,520
	Engineering/Geotech			12%	\$ 22,353
	Survey/SUE			7%	\$ 13,039
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 135,720
	Total Drainage Costs				\$ 373,905
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 959,939
	Cost per Property in Project Area	No. of Properties:		24	\$ 39,997
UTIL	Private Utility Relocations			10%	\$ 95,994
	Service Adjustment	24	EA	\$ 850	\$ 20,400
	Total Utility Relocation Costs				\$ 116,394



Innovative approaches
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Ranchettes 6 and 6A - North B

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	903	CY	\$ 25	\$ 22,569
	Incidental Lot Construction	60	EA	\$ 1,000	\$ 60,000
	Limestone/Flex Base	903	SY	\$ 15	\$ 13,542
	Mailbox Adjustment	60	EA	\$ 300	\$ 18,000
	Mill & Overlay	12564	SY	\$ 15	\$ 188,467
	Pavement Marking	5654	LF	\$ 2	\$ 11,308
	Ribbon Curb	11308	LF	\$ 20	\$ 226,160
	Subgrade Prep	903	SY	\$ 15	\$ 13,542
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	60	EA	\$ 3,500	\$ 210,000
	Subtotal				\$ 778,587
	Mobilization			10%	\$ 77,859
	Contingency			30%	\$ 233,576
	Subtotal				\$ 1,090,022
	Inspection Services			3.5%	\$ 38,151
	Engineering/Geotech			12%	\$ 130,803
	Survey/SUE			7%	\$ 76,302
Total Street Costs				\$ 1,335,277	
DRAINAGE & EROSION	Driveway Culverts 18"	60	EA	\$ 800	\$ 48,000
	RCB 4'x2'	1035	LF	\$ 200	\$ 207,000
	RCB 5'x2'	265	LF	\$ 240	\$ 63,600
	RCP 18"	0	LF	\$ 55	\$ -
	RCP 24"	325	LF	\$ 75	\$ 24,375
	RCP/RCB Headwall	12	EA	\$ 7,000	\$ 84,000
	Rip Rap	50	LF	\$ 200	\$ 10,000
	Swale Grading	3430	CY	\$ 19	\$ 65,166
	Trench Safety	1625	LF	\$ 3	\$ 4,875
	Reveg Disturbed Areas	9743	SY	\$ 5	\$ 48,716
	Silt Fence	7103	LF	\$ 3	\$ 21,309
	Temp Rock Berm	250	LF	\$ 25	\$ 6,250
	Subtotal				\$ 583,291
	Mobilization			10%	\$ 58,329
	Contingency			30%	\$ 174,987
	Subtotal				\$ 816,607
	Inspection Services			3.5%	\$ 28,581
	Engineering/Geotech			12%	\$ 97,993
	Survey/SUE			7%	\$ 57,163
TDLR/Environmental Review/Other				\$ 10,000	
Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 169,533	
Total Drainage Costs				\$ 1,179,877	
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 2,515,154
Cost per Property in Project Area		No. of Properties:		60	\$ 41,919
UTIL	Private Utility Relocations			10%	\$ 251,515
	Service Adjustment	60	EA	\$ 850	\$ 51,000
	Total Utility Relocation Costs				\$ 302,515



Innovative approaches
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Ranchettes 6 and 6A - North A

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	25	CY	\$ 25	\$ 625
	Incidental Lot Construction	16	EA	\$ 1,000	\$ 16,000
	Limestone/Flex Base	25	SY	\$ 15	\$ 375
	Mailbox Adjustment	16	EA	\$ 300	\$ 4,800
	Mill & Overlay	3849	SY	\$ 15	\$ 57,733
	Pavement Marking	1732	LF	\$ 2	\$ 3,464
	Ribbon Curb	3464	LF	\$ 20	\$ 69,280
	Subgrade Prep	25	SY	\$ 15	\$ 375
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	16	EA	\$ 3,500	\$ 56,000
	Subtotal				\$ 223,652
	Mobilization			10%	\$ 22,365
	Contingency			30%	\$ 67,096
	Subtotal				\$ 313,113
	Inspection Services			3.5%	\$ 10,959
	Engineering/Geotech			12%	\$ 37,574
	Survey/SUE			7%	\$ 21,918
Total Street Costs				\$ 383,564	
DRAINAGE & EROSION	Driveway Culverts 18"	16	EA	\$ 800	\$ 12,800
	RCB 4'x2'	0	LF	\$ 200	\$ -
	RCB 5'x2'	0	LF	\$ 240	\$ -
	RCP 18"	75	LF	\$ 55	\$ 4,125
	RCP 24"	0	LF	\$ 75	\$ -
	RCP/RCB Headwall	4	EA	\$ 7,000	\$ 28,000
	Rip Rap	50	LF	\$ 200	\$ 10,000
	Swale Grading	610	CY	\$ 19	\$ 11,582
	Trench Safety	75	LF	\$ 3	\$ 225
	Reveg Disturbed Areas	2123	SY	\$ 5	\$ 10,617
	Silt Fence	1732	LF	\$ 3	\$ 5,196
	Temp Rock Berm	250	LF	\$ 25	\$ 6,250
	Subtotal				\$ 88,795
	Mobilization			10%	\$ 8,879
	Contingency			30%	\$ 26,638
	Subtotal				\$ 124,313
	Inspection Services			3.5%	\$ 4,351
Engineering/Geotech			12%	\$ 14,918	
Survey/SUE			7%	\$ 8,702	
TDLR/Environmental Review/Other				\$ 10,000	
Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 41,301	
Total Drainage Costs				\$ 203,584	
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 587,148
Cost per Property in Project Area					No. of Properties: 16 \$ 36,696.73
UTIL	Private Utility Relocations			10%	\$ 58,715
	Service Adjustment	16	EA	\$ 850	\$ 13,600
	Total Utility Relocation Costs				\$ 72,315



Innovative approaches
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City of Cedar Park - Block House Creek Park Channelization

October 4, 2018

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Phase 1				
Engineering (100% Design)	1	EA	\$ 60,000	\$ 60,000
Engineering (Survey)	1	EA	\$ 22,500	\$ 22,500
Engineering (Geotech)	1	EA	\$ 6,500	\$ 6,500
Environmental Permitting	1	EA	\$ 30,000	\$ 30,000
H&H Study Update	1	EA	\$ 7,500	\$ 7,500
Phase 1 Subtotal				\$ 126,500
Phase 2				
Mobilization and Demobilization	1	EA	\$ 27,500	\$ 27,500
Care of Water During Construction	5	MON	\$ 2,500	\$ 12,500
Clearing and Grubbing	1.2	AC	\$ 1,500	\$ 1,800
Excavation (Rock)	16300	CY	\$ 25	\$ 407,500
Topsoil and Seedbed Preparation	7250	SY	\$ 6	\$ 43,500
Reveg Disturbed Areas	14500	SY	\$ 6	\$ 87,000
Tree Protection	500	LF	\$ 10	\$ 5,000
Temp Rock Berm	200	LF	\$ 35	\$ 7,000
Silt Fence/Safety Fencing	1100	LF	\$ 5	\$ 5,500
Temporary Construction Entrance	1	EA	\$ 2,500	\$ 2,500
Traffic Control	5	MON	\$ 4,000	\$ 20,000
City Construction Inspection	130	DAY	\$ 200	\$ 26,000
Construction Subtotal				\$ 645,800
Engineering (Construction Phase Services)	1	EA	\$ 7,500	\$ 7,500
Grant Administration/Management Consultant	1	EA	\$ 38,200	\$ 38,200
Phase 2 Subtotal				\$ 691,500
Opinion of Total Probable Cost (Phase 1 + 2)				\$ 818,000
Federal Share (75%)				\$ 613,500
Local Match (25%)				\$ 204,500



Innovative approaches
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Block House Creek - FEMA Floodplain Acquisition

ITEM	PROP ID	2018 WCAD VALUE	
1	R034508	\$	60,281
2	R034507	\$	51,561
3	R034499	\$	76,350
4	R034501	\$	44,310
5	R034478	\$	60,880
Privately Owned Properties			5
Average Property Value			\$ 58,676
Average Property Value with Markup		20%	\$ 70,412
Total Estimated Property Value			\$ 352,058
Appraisal		\$2,500	\$ 12,500
Title		\$1,000	\$ 5,000
Closing		\$1,000	\$ 5,000
Asbestos Testing		\$7,000	\$ 35,000
Demolition		\$15,000	\$ 75,000
Relocation		\$31,000	\$ 155,000
Survey		\$200	\$ 1,000
Program Management		5%	\$ 32,028
Estimated Acquisition Fees			\$ 672,586
Cost per Property in Project Area (5 properties)			\$ 134,517


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NICHOLS**

 Innovative approaches
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Block House Creek - 150' Channel Extension and Bridge

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Reconstruct Pedestrian Bridge	1500	SF	\$ 50	\$ 75,000
	Peach Tree Lane Bridge	6000	SF	\$ 100	\$ 600,000
	Guard Rail	600	LF	\$ 30	\$ 18,000
	Demolition/Excavation	2800	SY	\$ 15	\$ 42,000
	Incidental Lot Construction	5	EA	\$ 1,000	\$ 5,000
	Limestone/Flex Base	533	SY	\$ 15	\$ 8,000
	Mailbox Adjustment	5	EA	\$ 300	\$ 1,500
	Mill & Overlay	533	SY	\$ 15	\$ 8,000
	Pavement Marking	450	LF	\$ 2	\$ 900
	Ribbon Curb	450	LF	\$ 20	\$ 9,000
	Subgrade Prep	533	SY	\$ 15	\$ 8,000
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	5	EA	\$ 3,500	\$ 17,500
	Subtotal				\$ 807,900
	Mobilization			10%	\$ 80,790
	Contingency			30%	\$ 242,370
	Subtotal				\$ 1,131,060
	Inspection Services			3.5%	\$ 39,587
Engineering/Geotech			12%	\$ 135,727	
Survey/SUE			7%	\$ 79,174	
Total Street Costs				\$ 1,385,549	
DRAINAGE	Excavation	33166	CY	\$ 19	\$ 630,148
	Reveg Disturbed Areas	26100	SY	\$ 5	\$ 130,500
	Temp Rock Berm	200	LF	\$ 25	\$ 5,000
	Subtotal				\$ 765,648
	Mobilization			10%	\$ 76,565
	Contingency			30%	\$ 229,694
	Subtotal				\$ 1,071,907
	Inspection Services			3.5%	\$ 37,517
	Engineering/Geotech			12%	\$ 128,629
	Survey/SUE			7%	\$ 75,033
	TDLR/Environmental Review/Other				\$ 50,000
	Easement Acquisition (nominal estimate)				\$ 10,000
Total Drainage Costs				\$ 1,373,086	
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 2,758,634
	Cost per Property in Project Area	No. of Properties:		80	\$ 34,483
UTIL	Private Utility Relocations			10%	\$ 275,863
	Service Adjustment	5	EA	\$ 850	\$ 4,250
	Total Utility Relocation Costs				\$ 280,113



Innovative approaches
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Ranchettes 6 and 6A - South A

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	53	CY	\$ 25	\$ 1,333
	Incidental Lot Construction	66	EA	\$ 1,000	\$ 66,000
	Limestone/Flex Base	53	SY	\$ 15	\$ 800
	Mailbox Adjustment	66	EA	\$ 300	\$ 19,800
	Mill & Overlay	19084	SY	\$ 15	\$ 286,267
	Pavement Marking	8588	LF	\$ 2	\$ 17,176
	Ribbon Curb	17176	LF	\$ 20	\$ 343,520
	Subgrade Prep	53	SY	\$ 15	\$ 800
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	66	EA	\$ 3,500	\$ 231,000
	Subtotal				\$ 981,696
	Mobilization			10%	\$ 98,170
	Contingency			30%	\$ 294,509
	Subtotal				\$ 1,374,374
	Inspection Services			3.5%	\$ 48,103
	Engineering/Geotech			12%	\$ 164,925
	Survey/SUE			7%	\$ 96,206
Total Street Costs				\$ 1,683,609	
DRAINAGE & EROSION	Driveway Culverts 18"	66	EA	\$ 800	\$ 52,800
	RCB 2'x2'	0	LF	\$ 170	\$ -
	RCB 3'x2'	30	LF	\$ 190	\$ 5,700
	RCP 18"	25	LF	\$ 55	\$ 1,375
	RCP 24"	65	LF	\$ 75	\$ 4,875
	RCP/RCB Headwall	8	EA	\$ 7,000	\$ 56,000
	Rip Rap	90	LF	\$ 200	\$ 18,000
	Swale Grading	3669	CY	\$ 19	\$ 69,711
	Trench Safety	120	LF	\$ 3	\$ 360
	Reveg Disturbed Areas	11865	SY	\$ 5	\$ 59,327
	Silt Fence	8588	LF	\$ 3	\$ 25,764
	Temp Rock Berm	250	LF	\$ 25	\$ 6,250
	Subtotal				\$ 300,163
	Mobilization			10%	\$ 30,016
	Contingency			30%	\$ 90,049
	Subtotal				\$ 420,228
	Inspection Services			3.5%	\$ 14,708
	Engineering/Geotech			12%	\$ 50,427
	Survey/SUE			7%	\$ 29,416
TDLR/Environmental Review/Other				\$ 10,000	
Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 204,867	
Total Drainage Costs				\$ 729,646	
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 2,413,255
Cost per Property in Project Area		No. of Properties:		66	\$ 36,564
UTIL	Private Utility Relocations			10%	\$ 241,325
	Service Adjustment	66	EA	\$ 850	\$ 56,100
	Total Utility Relocation Costs				\$ 297,425



Innovative approaches
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Outstanding service

Ranchettes 6 and 6A - South B

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	100	CY	\$ 25	\$ 2,500
	Incidental Lot Construction	83	EA	\$ 1,000	\$ 83,000
	Limestone/Flex Base	100	SY	\$ 15	\$ 1,500
	Mailbox Adjustment	83	EA	\$ 300	\$ 24,900
	Mill & Overlay	15742	SY	\$ 15	\$ 236,133
	Pavement Marking	7084	LF	\$ 2	\$ 14,168
	Ribbon Curb	14168	LF	\$ 20	\$ 283,360
	Subgrade Prep	100	SY	\$ 15	\$ 1,500
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	83	EA	\$ 3,500	\$ 290,500
	Subtotal				\$ 952,561
	Mobilization			10%	\$ 95,256
	Contingency			30%	\$ 285,768
	Subtotal				\$ 1,333,586
	Inspection Services			3.5%	\$ 46,676
	Engineering/Geotech			12%	\$ 160,030
	Survey/SUE			7%	\$ 93,351
	Total Street Costs				\$ 1,633,643
DRAINAGE & EROSION	Driveway Culverts 18"	83	EA	\$ 800	\$ 66,400
	RCB 2'x2'	65	LF	\$ 170	\$ 11,050
	RCB 3'x2'	0	LF	\$ 190	\$ -
	RCP 18"	125	LF	\$ 55	\$ 6,875
	RCP 24"	110	LF	\$ 75	\$ 8,250
	RCP/RCB Headwall	18	EA	\$ 7,000	\$ 126,000
	Rip Rap	90	LF	\$ 200	\$ 18,000
	Swale Grading	2256	CY	\$ 19	\$ 42,855
	Trench Safety	300	LF	\$ 3	\$ 900
	Reveg Disturbed Areas	8428	SY	\$ 5	\$ 42,142
	Silt Fence	7438	LF	\$ 3	\$ 22,314
	Temp Rock Berm	250	LF	\$ 30	\$ 7,500
	Subtotal				\$ 352,286
	Mobilization			10%	\$ 35,229
	Contingency			30%	\$ 105,686
	Subtotal				\$ 493,200
	Inspection Services			3.5%	\$ 17,262
	Engineering/Geotech			12%	\$ 59,184
Survey/SUE			7%	\$ 34,524	
TDLR/Environmental Review/Other				\$ 10,000	
Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 177,489	
Total Drainage Costs				\$ 791,660	
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					
				\$ 2,425,302	
Cost per Property in Project Area		No. of Properties:		83	\$ 29,221
UTIL	Private Utility Relocations			10%	\$ 242,530
	Service Adjustment	83	EA	\$ 850	\$ 70,550
	Total Utility Relocation Costs				\$ 313,080



Innovative approaches
Practical results
Outstanding service

Riviera - Northwest

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	ADA Ramps	35	EA	\$ 1,700	\$ 59,500
	Demolition/Excavation	114	CY	\$ 25	\$ 2,847
	Incidental Lot Construction	17	EA	\$ 1,000	\$ 17,000
	Mailbox Adjustment	17	EA	\$ 300	\$ 5,100
	Mill & Overlay	4950	SY	\$ 15	\$ 74,252
	Ribbon Curb	3874	LF	\$ 20	\$ 77,480
	Sidewalk 4-ft	0	SF	\$ 8	\$ -
	Subgrade Prep	114	SY	\$ 15	\$ 1,708
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	17	EA	\$ 3,500	\$ 59,500
	Subtotal				\$ 312,387
	Mobilization			10%	\$ 31,239
	Contingency			30%	\$ 93,716
	Subtotal				\$ 437,342
	Inspection Services			3.5%	\$ 15,307
	Engineering/Geotech			12%	\$ 52,481
	Survey/SUE			7%	\$ 30,614
	Total Street Costs				\$ 535,744
DRAINAGE & EROSION	Driveway Culverts 18"	17	EA	\$ 800	\$ 13,600
	RCB 3'x2'	40	LF	\$ 190	\$ 7,980
	RCB 4'x2'	165	LF	\$ 200	\$ 34,650
	RCP/RCB Headwall	22	EA	\$ 7,000	\$ 161,700
	Swale Grading	587	CY	\$ 19	\$ 11,150
	Trench Safety	205	LF	\$ 3	\$ 646
	Reveg Disturbed Areas	2074	SY	\$ 5	\$ 10,371
	Silt Fence	1937	LF	\$ 3	\$ 5,811
	Subtotal				\$ 245,908
	Mobilization			10%	\$ 24,591
	Contingency			30%	\$ 73,772
	Subtotal				\$ 344,271
	Inspection Services			3.5%	\$ 12,049
	Engineering/Geotech			12%	\$ 41,312
	Survey/SUE			7%	\$ 24,099
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 124,020
	Total Drainage Costs				\$ 555,752
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,091,496
	Cost per Property in Project Area	No. of Properties:		17	\$ 64,206
UTILITIES	Private Utility Relocations			10%	\$ 109,150
	Fire Hydrant Adjust	10	EA	\$ 350	\$ 3,500
	Service Adjustment	17	EA	\$ 850	\$ 14,450
	Total Utility Relocation Costs				\$ 127,100



Innovative approaches
Practical results
Outstanding service

Riviera - East

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	ADA Ramps	35	EA	\$ 1,700	\$ 59,500
	Demolition/Excavation	348	CY	\$ 25	\$ 8,704
	Incidental Lot Construction	47	EA	\$ 1,000	\$ 47,000
	Mailbox Adjustment	47	EA	\$ 300	\$ 14,100
	Mill & Overlay	11715	SY	\$ 15	\$ 175,720
	Ribbon Curb	9168	LF	\$ 20	\$ 183,360
	Sidewalk 4-ft	18336	SF	\$ 8	\$ 146,688
	Subgrade Prep	261	SY	\$ 15	\$ 3,917
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	47	EA	\$ 3,500	\$ 164,500
	Subtotal				\$ 818,488
	Mobilization			10%	\$ 81,849
	Contingency			30%	\$ 245,547
	Subtotal				\$ 1,145,884
	Inspection Services			3.5%	\$ 40,106
	Engineering/Geotech			12%	\$ 137,506
	Survey/SUE			7%	\$ 80,212
	Total Street Costs				\$ 1,403,708
DRAINAGE & EROSION	Driveway Culverts 18"	47	EA	\$ 800	\$ 37,600
	RCB 2.5'x2'	180	LF	\$ 180	\$ 34,020
	RCB 4'x2'	60	LF	\$ 200	\$ 12,600
	RCB 5'x2'	50	LF	\$ 240	\$ 12,600
	RCB 5'x2.5'	180	LF	\$ 250	\$ 47,250
	RCP/RCB Headwall	22	EA	\$ 7,000	\$ 161,700
	Swale Grading	1539	CY	\$ 19	\$ 29,249
	Trench Safety	470	LF	\$ 3	\$ 1,481
	Reveg Disturbed Areas	5357	SY	\$ 5	\$ 26,785
	Silt Fence	5109	LF	\$ 3	\$ 15,327
	Subtotal				\$ 378,611
	Mobilization			10%	\$ 37,861
	Contingency			30%	\$ 113,583
	Subtotal				\$ 530,056
	Inspection Services			3.5%	\$ 18,552
	Engineering/Geotech			12%	\$ 63,607
	Survey/SUE			7%	\$ 37,104
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 327,015
	Total Drainage Costs				\$ 986,333
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 2,390,041
Cost per Property in Project Area		No. of Properties:		5	\$ 478,008
UTILITIES	Private Utility Relocations			10%	\$ 239,004
	Fire Hydrant Adjust	10	EA	\$ 350	\$ 3,500
	Service Adjustment	47	EA	\$ 850	\$ 39,950
	Total Utility Relocation Costs				\$ 282,454



Innovative approaches
Practical results
Outstanding service

Riviera - Southwest

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	ADA Ramps	35	EA	\$ 1,700	\$ 59,500
	Demolition/Excavation	62	CY	\$ 25	\$ 1,556
	Incidental Lot Construction	21	EA	\$ 1,000	\$ 21,000
	Mailbox Adjustment	21	EA	\$ 300	\$ 6,300
	Mill & Overlay	4293	SY	\$ 15	\$ 64,400
	Ribbon Curb	3360	LF	\$ 20	\$ 67,200
	Sidewalk 4-ft	0	SF	\$ 8	\$ -
	Subgrade Prep	62	SY	\$ 15	\$ 933
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	21	EA	\$ 3,500	\$ 73,500
	Subtotal				\$ 309,389
	Mobilization			10%	\$ 30,939
	Contingency			30%	\$ 92,817
	Subtotal				\$ 433,144
	Inspection Services			3.5%	\$ 15,160
	Engineering/Geotech			12%	\$ 51,977
	Survey/SUE			7%	\$ 30,320
	Total Street Costs				\$ 530,602
DRAINAGE & EROSION	Driveway Culverts 18"	21	EA	\$ 800	\$ 16,800
	RCB 3'x2'	90	LF	\$ 190	\$ 17,955
	RCP 18"	50	LF	\$ 55	\$ 2,888
	RCP/RCB Headwall	22	EA	\$ 7,000	\$ 161,700
	Swale Grading	359	CY	\$ 19	\$ 6,824
	Trench Safety	140	LF	\$ 3	\$ 441
	Reveg Disturbed Areas	1569	SY	\$ 5	\$ 7,844
	Silt Fence	1820	LF	\$ 3	\$ 5,460
	Subtotal				\$ 219,912
	Mobilization			10%	\$ 21,991
	Contingency			30%	\$ 65,973
	Subtotal				\$ 307,876
	Inspection Services			3.5%	\$ 10,776
	Engineering/Geotech			12%	\$ 36,945
	Survey/SUE			7%	\$ 21,551
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 116,532
	Total Drainage Costs				\$ 503,680
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,034,282
	Cost per Property in Project Area	No. of Properties:		21	\$ 49,252
UTILITIES	Private Utility Relocations			10%	\$ 103,428.23
	Fire Hydrant Adjust	10	EA	\$ 350	\$ 3,500
	Service Adjustment	21	EA	\$ 850	\$ 17,850
	Total Utility Relocation Costs				\$ 124,778



Innovative approaches
Practical results
Outstanding service

Cluck Creek - Upper

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	5400	CY	\$ 25	\$ 135,000
	Incidental Lot Construction	17	EA	\$ 1,000	\$ 16,500
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	0	EA	\$ 3,500	\$ -
	Subtotal				\$ 166,500
	Mobilization			10%	\$ 16,650
	Contingency			30%	\$ 49,950
	Subtotal				\$ 233,100
	Inspection Services			3.5%	\$ 8,159
	Engineering/Geotech			12%	\$ 27,972
	Survey/SUE			7%	\$ 16,317
	Total Street Costs				\$ 285,548
DRAINAGE & EROSION	RCB 5'x2'	0	LF	\$ 240	\$ -
	RCB 5'x5'	0	LF	\$ 320	\$ -
	Rip Rap	0	CY	\$ 200	\$ -
	Swale Grading	16582	CY	\$ 19	\$ 315,062
	Trench Safety	0	LF	\$ 3	\$ -
	Reveg Disturbed Areas	19644	SY	\$ 5	\$ 98,222
	SCE	2	EA	\$ 3,000	\$ 6,000
	Silt Fence	624	LF	\$ 3	\$ 1,872
	Temp Rock Berm	100	LF	\$ 30	\$ 3,000
	Subtotal				\$ 424,156
	Mobilization			10%	\$ 42,416
	Contingency			30%	\$ 127,247
	Subtotal				\$ 593,819
	Inspection Services			3.5%	\$ 20,784
	Engineering/Geotech			12%	\$ 71,258
	Survey/SUE			7%	\$ 41,567
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 110,565
	Total Drainage Costs				\$ 847,993
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,133,541
	Cost per Property in Project Area	No. of Properties:		100	\$ 11,335
UTILITIES	Private Utility Relocations			10%	\$ 113,354
	Service Adjustment	12	EA	\$ 850	\$ 10,200
	W, WW Manhole Adjustment	7	EA	\$ 2,000	\$ 14,400
	Total Utility Relocation Costs				\$ 137,954



Innovative approaches
Practical results
Outstanding service

Cluck Creek - Lower

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	12600	CY	\$ 25	\$ 315,000
	Incidental Lot Construction	39	EA	\$ 1,000	\$ 38,500
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	4	EA	\$ 3,500	\$ 14,000
	Subtotal				\$ 382,500
	Mobilization			10%	\$ 38,250
	Contingency			30%	\$ 114,750
	Subtotal				\$ 535,500
	Inspection Services			3.5%	\$ 18,743
	Engineering/Geotech			12%	\$ 64,260
	Survey/SUE			7%	\$ 37,485
	Total Street Costs				\$ 655,988
DRAINAGE & EROSION	RCB 5'x2'	100	LF	\$ 240	\$ 24,000
	RCB 5'x5'	400	LF	\$ 320	\$ 128,000
	Rip Rap	10	CY	\$ 200	\$ 2,000
	Swale Grading	46322	CY	\$ 19	\$ 880,118
	Trench Safety	7000	LF	\$ 3	\$ 21,000
	Reveg Disturbed Areas	49467	SY	\$ 5	\$ 247,335
	SCE	4	EA	\$ 3,000	\$ 12,000
	Silt Fence	1929	LF	\$ 3	\$ 5,788
	Temp Rock Berm	200	LF	\$ 30	\$ 6,000
	Subtotal				\$ 1,326,241
	Mobilization			10%	\$ 132,624
	Contingency			30%	\$ 397,872
	Subtotal				\$ 1,856,737
	Inspection Services			3.5%	\$ 64,986
	Engineering/Geotech			12%	\$ 222,808
	Survey/SUE			7%	\$ 129,972
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 252,252
	Total Drainage Costs				\$ 2,536,755
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 3,192,743
	Cost per Property in Project Area	No. of Properties:		34	\$ 93,904
UTILITIES	Private Utility Relocations			10%	\$ 319,274
	W, WW Manhole Adjustment	17	EA	\$ 2,000	\$ 33,600
	Service Adjustment	28	EA	\$ 850	\$ 23,800
	Total Utility Relocation Costs				\$ 376,674



Innovative approaches
Practical results
Outstanding service

Deer Run

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	ADA Ramps	4	EA	\$ 1,700	\$ 6,800
	Concrete Bollards	2	EA	\$ 750	\$ 1,500
	Demolition/Excavation	1523	CY	\$ 25	\$ 38,079
	Limestone/Flex Base	914	SY	\$ 15	\$ 13,708
	Mill & Overlay	4583	SY	\$ 15	\$ 68,750
	Pavement Marking	1375	LF	\$ 2	\$ 2,750
	Sidewalk 4-ft	11000	SF	\$ 8	\$ 88,000
	Subgrade Prep	914	SY	\$ 15	\$ 13,708
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	U-Channel Curb	400	LF	\$ 15	\$ 6,000
	Subtotal				\$ 254,295
	Mobilization			10%	\$ 25,430
	Contingency			30%	\$ 76,289
	Subtotal				\$ 356,014
	Inspection Services			3.5%	\$ 12,460
	Engineering/Geotech			12%	\$ 42,722
	Survey/SUE			7%	\$ 24,921
	Total Street Costs				\$ 436,117
DRAINAGE & EROSION	12-ft U-Channel	265	LF	\$ 70	\$ 18,550
	Neenah Grate Inlet 3'x3'	17	EA	\$ 4,000	\$ 68,000
	RCP 18"	120	LF	\$ 55	\$ 6,600
	RCP 36"	750	LF	\$ 130	\$ 97,500
	RCP 48"	775	LF	\$ 210	\$ 162,750
	RCP 48" & Headwall w/Disspator	1	EA	\$ 8,200	\$ 8,200
	Storm Manholes	5	EA	\$ 5,500	\$ 27,500
	Trench Safety	1645	LF	\$ 3	\$ 4,935
	SCE	1	EA	\$ 3,000	\$ 3,000
	Silt Fence	1645	LF	\$ 3	\$ 4,935
	Subtotal				\$ 401,970
	Mobilization			10%	\$ 40,197
	Contingency			30%	\$ 120,591
	Subtotal				\$ 562,758
	Inspection Services			3.5%	\$ 19,697
	Engineering/Geotech			12%	\$ 67,531
	Survey/SUE			7%	\$ 39,393
	TDLR/Environmental Review/Other				\$ 10,000
Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 58,500	
Total Drainage Costs				\$ 757,879	
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					
				\$ 1,193,995	
Cost per Property in Project Area		No. of Properties:		23	\$ 51,913
UTIL	Private Utility Relocations			10%	\$ 119,400
	Service Adjustment	23	EA	\$ 850	\$ 19,550
	Total Utility Relocation Costs				\$ 138,950

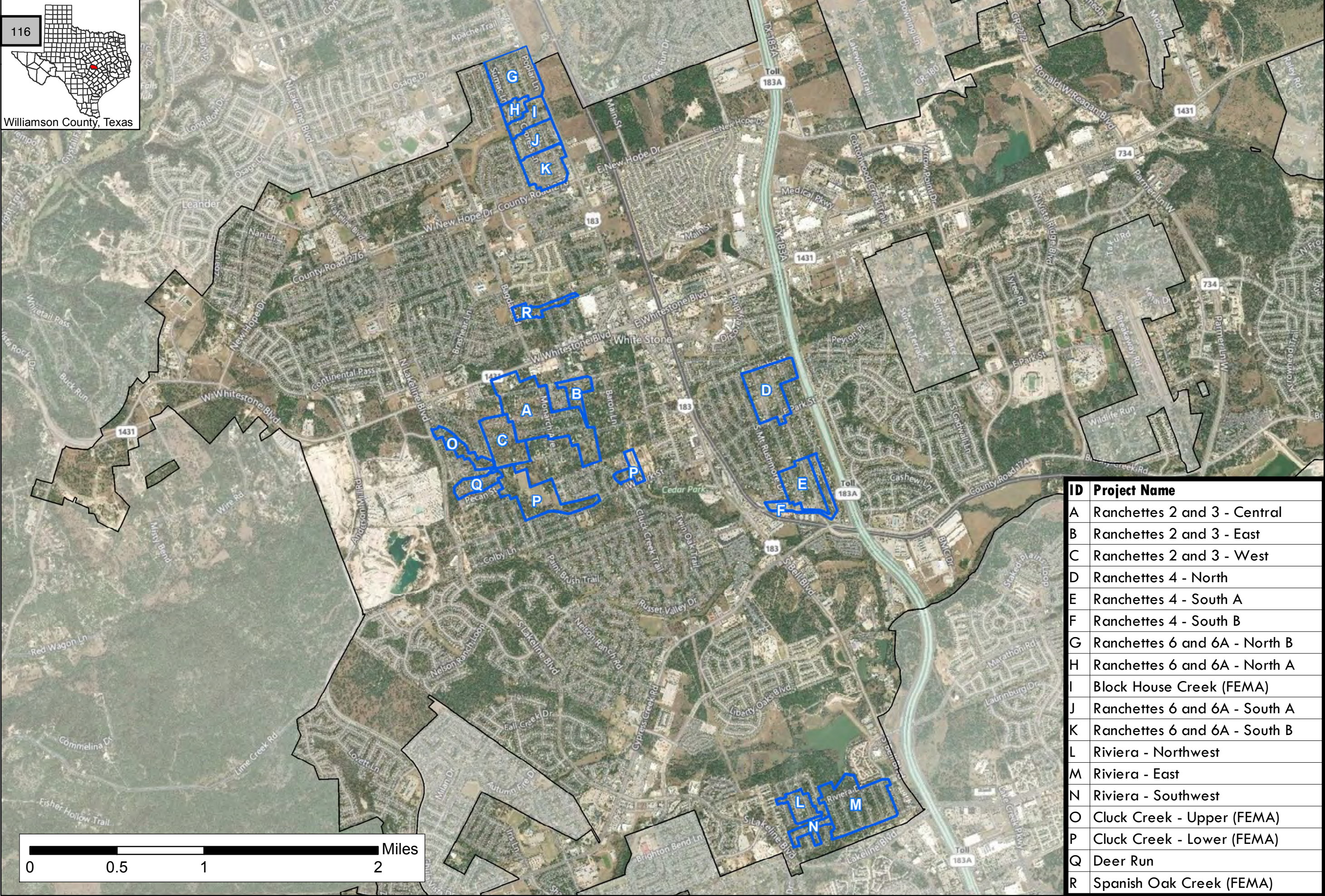


Innovative approaches
Practical results
Outstanding service

Spanish Oak Creek

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREETS	Demolition/Excavation	7700	CY	\$ 25	\$ 192,500
	Incidental Lot Construction	24	EA	\$ 1,000	\$ 24,000
	Traffic Control	1	EA	\$ 15,000	\$ 15,000
	Type I Driveway	2	EA	\$ 3,500	\$ 7,000
	Subtotal				\$ 238,500
	Mobilization			10%	\$ 23,850
	Contingency			30%	\$ 71,550
	Subtotal				\$ 333,900
	Inspection Services			3.5%	\$ 11,687
	Engineering/Geotech			12%	\$ 40,068
	Survey/SUE			7%	\$ 23,373
	Total Street Costs				\$ 409,028
DRAINAGE & EROSION	RCB 6'x4'	400	LF	\$ 320	\$ 128,000
	Rip Rap	20	CY	\$ 200	\$ 4,000
	Swale Grading	9711	CY	\$ 19	\$ 184,511
	Trench Safety	400	LF	\$ 3	\$ 1,200
	Reveg Disturbed Areas	10447	SY	\$ 5	\$ 52,233
	SCE	2	EA	\$ 3,000	\$ 6,000
	Silt Fence	2000	LF	\$ 3	\$ 6,000
	Temp Rock Berm	100	LF	\$ 30	\$ 3,000
	Subtotal				\$ 384,944
	Mobilization			10%	\$ 38,494
	Contingency			30%	\$ 115,483
	Subtotal				\$ 538,922
	Inspection Services			3.5%	\$ 18,862
	Engineering/Geotech			12%	\$ 64,671
	Survey/SUE			7%	\$ 37,725
	TDLR/Environmental Review/Other				\$ 10,000
	Easement Acquisition (100% cost plus legal costs, appraisal)				\$ 117,000
	Total Drainage Costs				\$ 787,180
OPINION OF TOTAL PROJECT COSTS (Streets and Drainage):					\$ 1,196,207
Cost per Property in Project Area		No. of Properties:		40	\$ 29,905
UTILITIES	Private Utility Relocations			10%	\$ 119,621
	W, WW Manhole Adjustment	13	EA	\$ 2,000	\$ 26,400
	Service Adjustment	24	EA	\$ 850	\$ 20,400
	Total Utility Relocation Costs				\$ 166,421

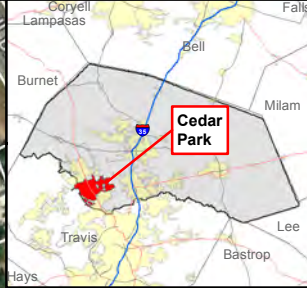
APPENDIX C
PRIORITY PROJECT AREA MAPS



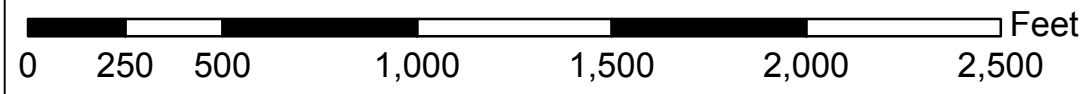
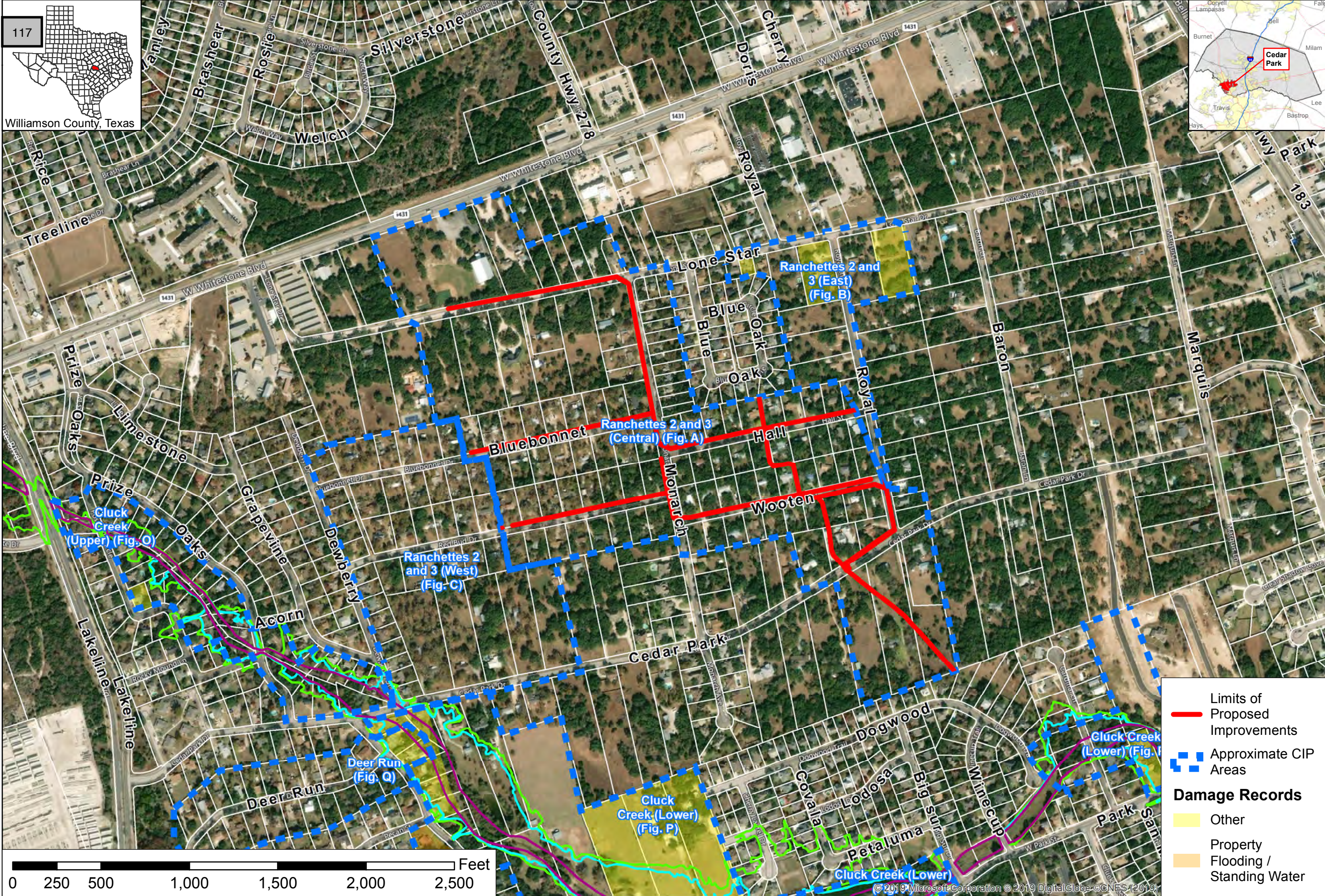
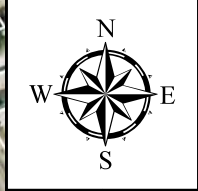
ID	Project Name
A	Ranchettes 2 and 3 - Central
B	Ranchettes 2 and 3 - East
C	Ranchettes 2 and 3 - West
D	Ranchettes 4 - North
E	Ranchettes 4 - South A
F	Ranchettes 4 - South B
G	Ranchettes 6 and 6A - North B
H	Ranchettes 6 and 6A - North A
I	Block House Creek (FEMA)
J	Ranchettes 6 and 6A - South A
K	Ranchettes 6 and 6A - South B
L	Riviera - Northwest
M	Riviera - East
N	Riviera - Southwest
O	Cluck Creek - Upper (FEMA)
P	Cluck Creek - Lower (FEMA)
Q	Deer Run
R	Spanish Oak Creek (FEMA)



Williamson County, Texas



DATE CREATED	DATE	DATE	DATE	DATE	DATE
2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019
PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.
10431	10431	10431	10431	10431	10431
PROJECT NAME	PROJECT NAME	PROJECT NAME	PROJECT NAME	PROJECT NAME	PROJECT NAME
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PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.
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PROJECT NAME	PROJECT NAME	PROJECT NAME	PROJECT NAME	PROJECT NAME	PROJECT NAME
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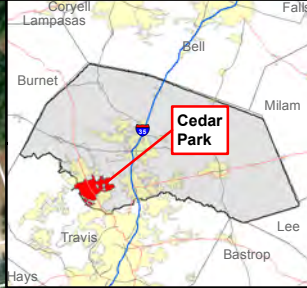
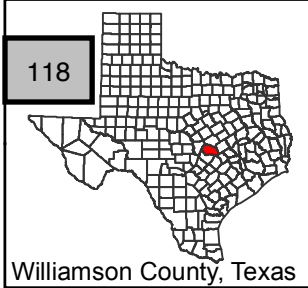
- Limits of Proposed Improvements
- Approximate CIP Areas
- Damage Records
 - Other
 - Property Flooding / Standing Water
- Cluck Creek (Lower) (Fig. Q)

CITY OF CEDAR PARK

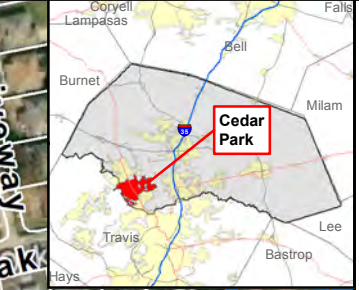
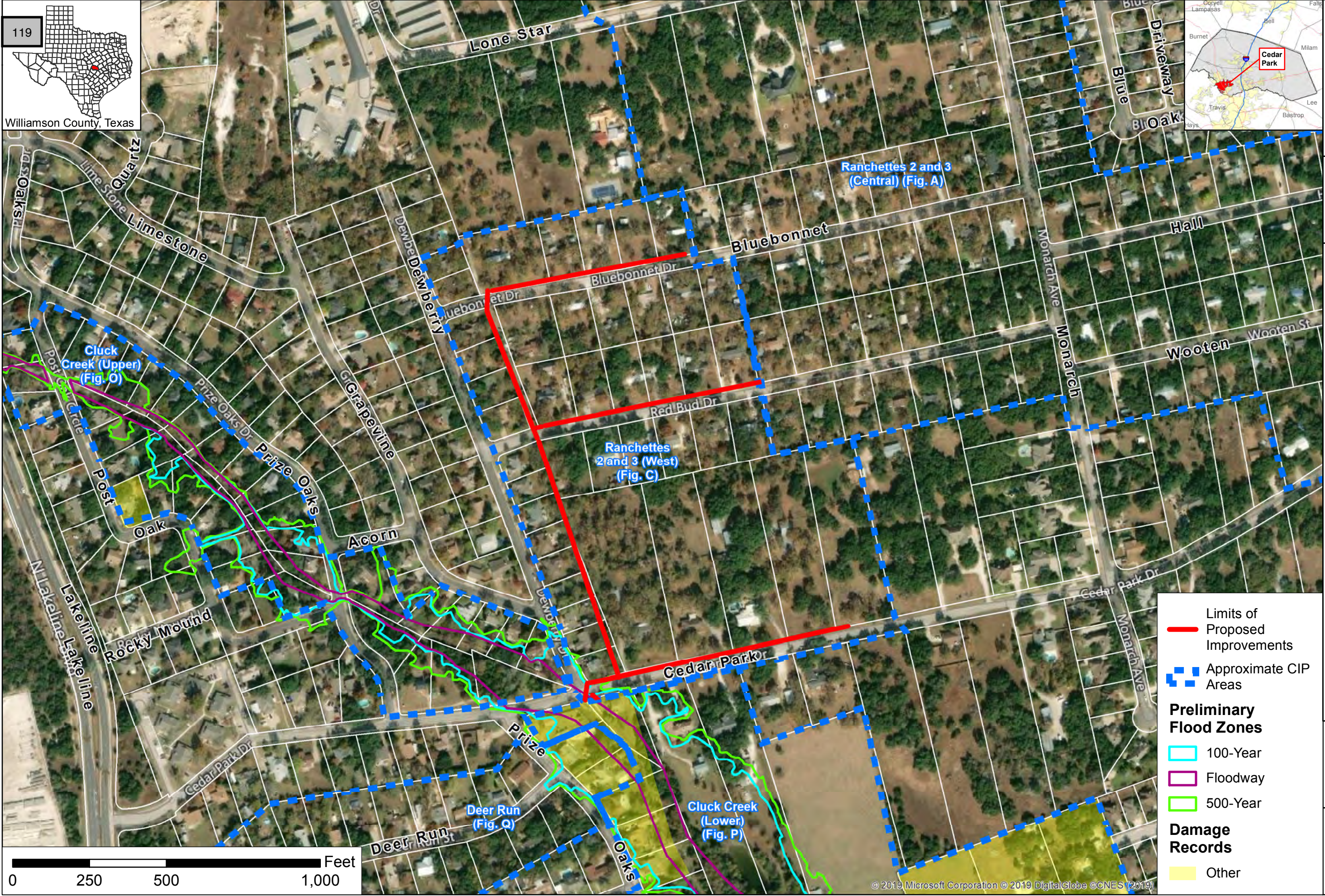
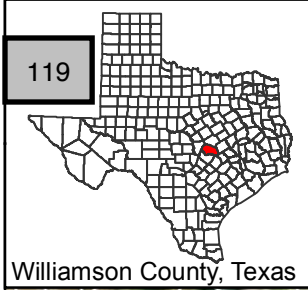
Ranchettes 2 and 3 (Central)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

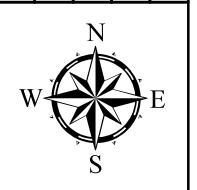
FIGURE
A



CITY OF CEDAR PARK	
Ranchettes 2 and 3 (East)	
FIGURE B	
FRESE AND NICHOLS, INC. 10431 MORADO CIRCLE SUITE 300 AUSTIN, TEXAS 78759 PHONE: 512-617-3100 FAX: 512-617-3101	



DATE CREATED	DATE: 2/11/2019
DTM & COORDINATE SYSTEM	NAD83 State Plane (feet), Texas Central
FILE NAME	Name: ME_20170601
PREPARED BY	BACK



CITY OF CEDAR PARK

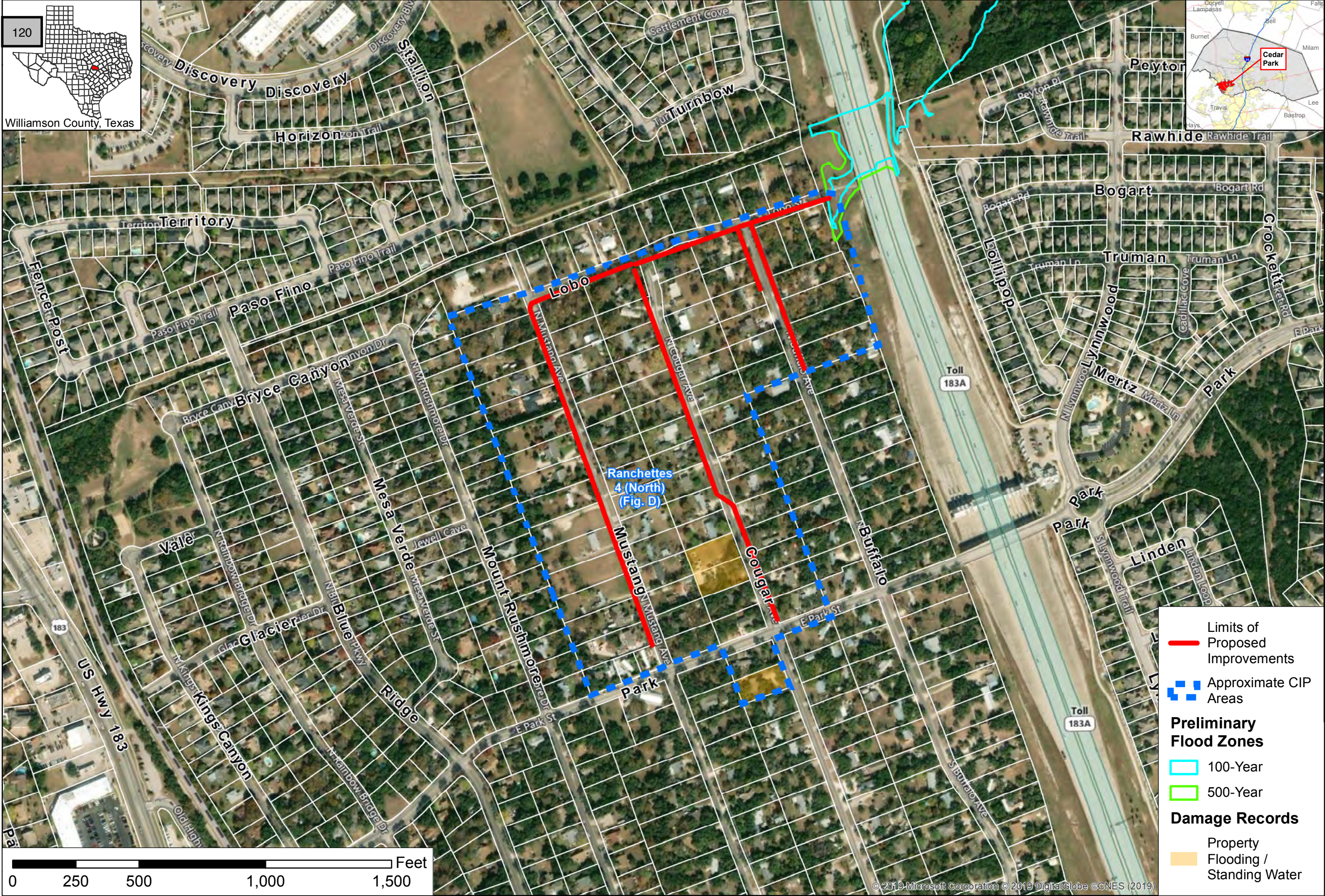
Ranchettes 2 and 3 (West)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

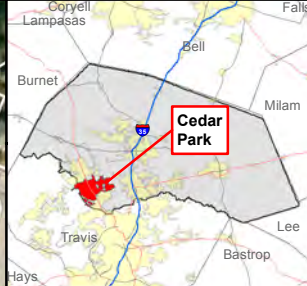
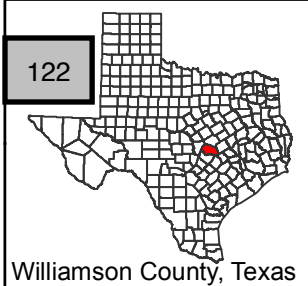
FIGURE

C

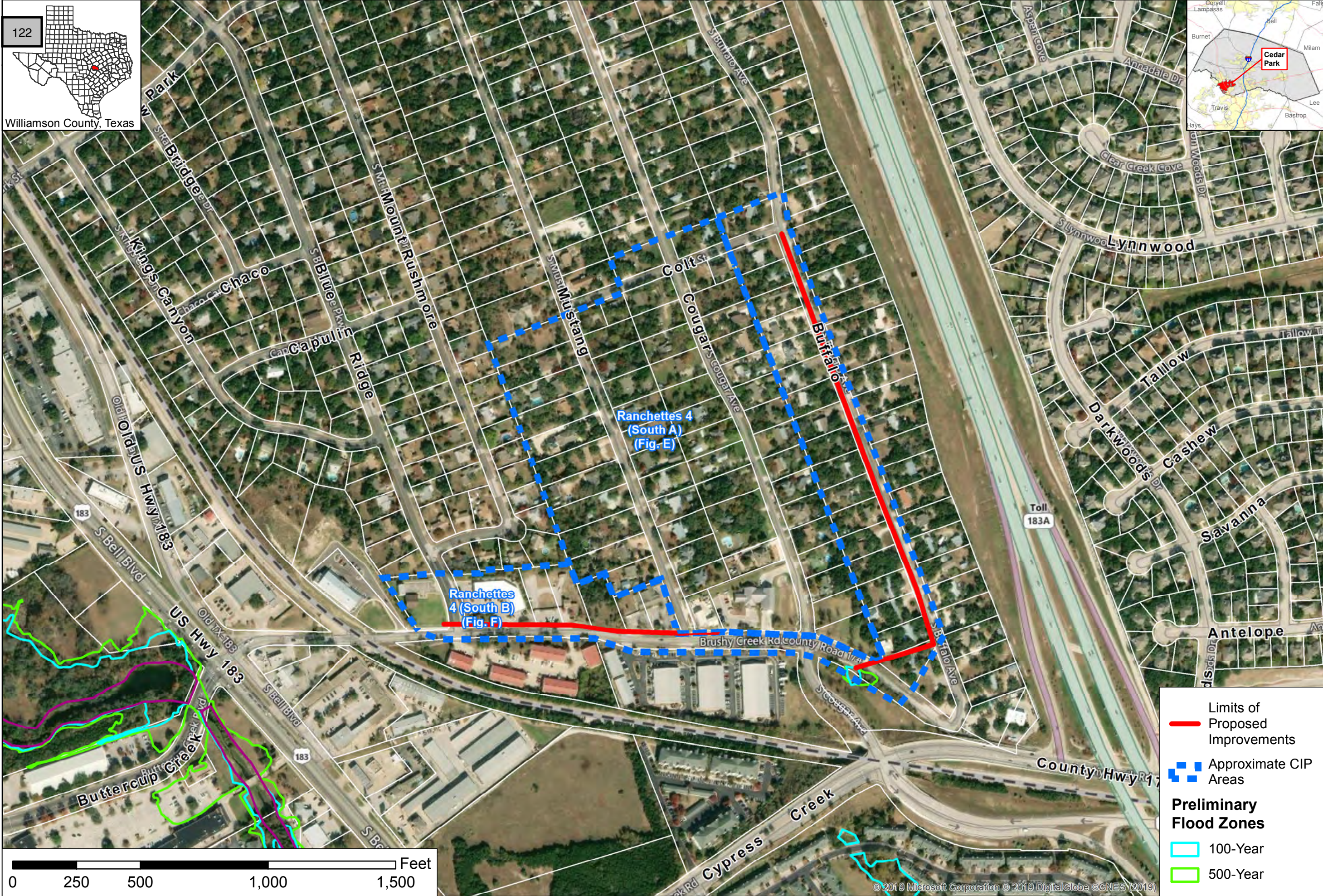
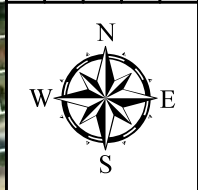
- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones**
 - 100-Year
 - Floodway
 - 500-Year
- Damage Records**
 - Other



CITY OF CEDAR PARK	
Ranchettes 4 (North)	
FIGURE D	
FRESE AND NICHOLS, INC. 10431 MORADO CIRCLE SUITE 300 AUSTIN, TEXAS 78759 PHONE: 512-617-3100 FAX: 512-617-3101	
DATE CREATED: 2/11/2019 DATE OF COORDINATE SYSTEM: NAD83 State Plane (feet), Texas Central FILE NAME: ME_20170601 PREPARED BY: BCK	



DATE CREATED	DATE: 2/11/2019
DATE & COORDINATE SYSTEM	NAD83 State Plane (feet) Texas Central
FILE NAME	Name: ME_20170601
PREPARED BY	BACK



- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones
 - 100-Year
 - 500-Year

CITY OF CEDAR PARK

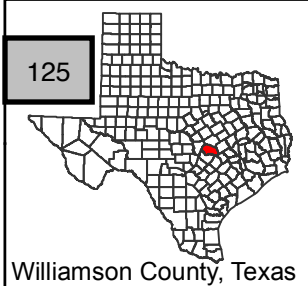
Ranchettes 4 (South B)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

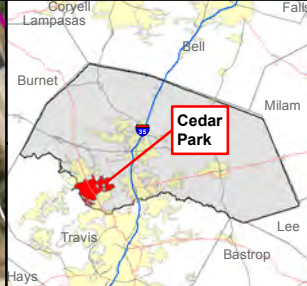
FIGURE
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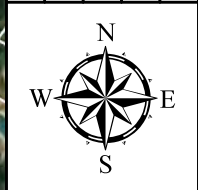




Williamson County, Texas



DATE CREATED	DATE	DATE	DATE	DATE	DATE
2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019
PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.
10431 MORADO CIRCLE	10431 MORADO CIRCLE	10431 MORADO CIRCLE	10431 MORADO CIRCLE	10431 MORADO CIRCLE	10431 MORADO CIRCLE
SUITE 300	SUITE 300	SUITE 300	SUITE 300	SUITE 300	SUITE 300
AUSTIN, TEXAS 78759	AUSTIN, TEXAS 78759	AUSTIN, TEXAS 78759	AUSTIN, TEXAS 78759	AUSTIN, TEXAS 78759	AUSTIN, TEXAS 78759
PHONE: 512-617-3100	PHONE: 512-617-3100	PHONE: 512-617-3100	PHONE: 512-617-3100	PHONE: 512-617-3100	PHONE: 512-617-3100
FAX: 512-617-3101	FAX: 512-617-3101	FAX: 512-617-3101	FAX: 512-617-3101	FAX: 512-617-3101	FAX: 512-617-3101
PREPARED BY	PREPARED BY	PREPARED BY	PREPARED BY	PREPARED BY	PREPARED BY
NAME: ME, 20170601	NAME: ME, 20170601	NAME: ME, 20170601	NAME: ME, 20170601	NAME: ME, 20170601	NAME: ME, 20170601
BACK	BACK	BACK	BACK	BACK	BACK



CITY OF CEDAR PARK

Block House Creek (FEMA Mitigation)



Limits of Proposed Improvements

Approximate CIP Areas

Preliminary Flood Zones

100-Year

Floodway

500-Year

Damage Records

Other

Property Flooding / Standing Water

Structural Flooding

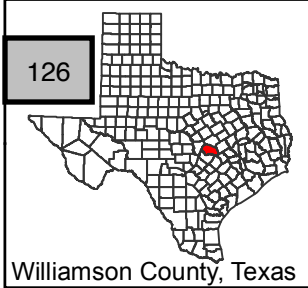
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250

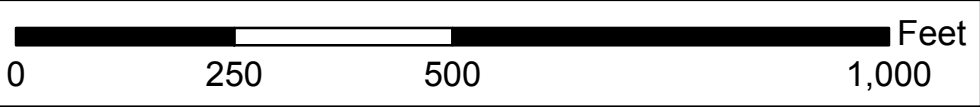
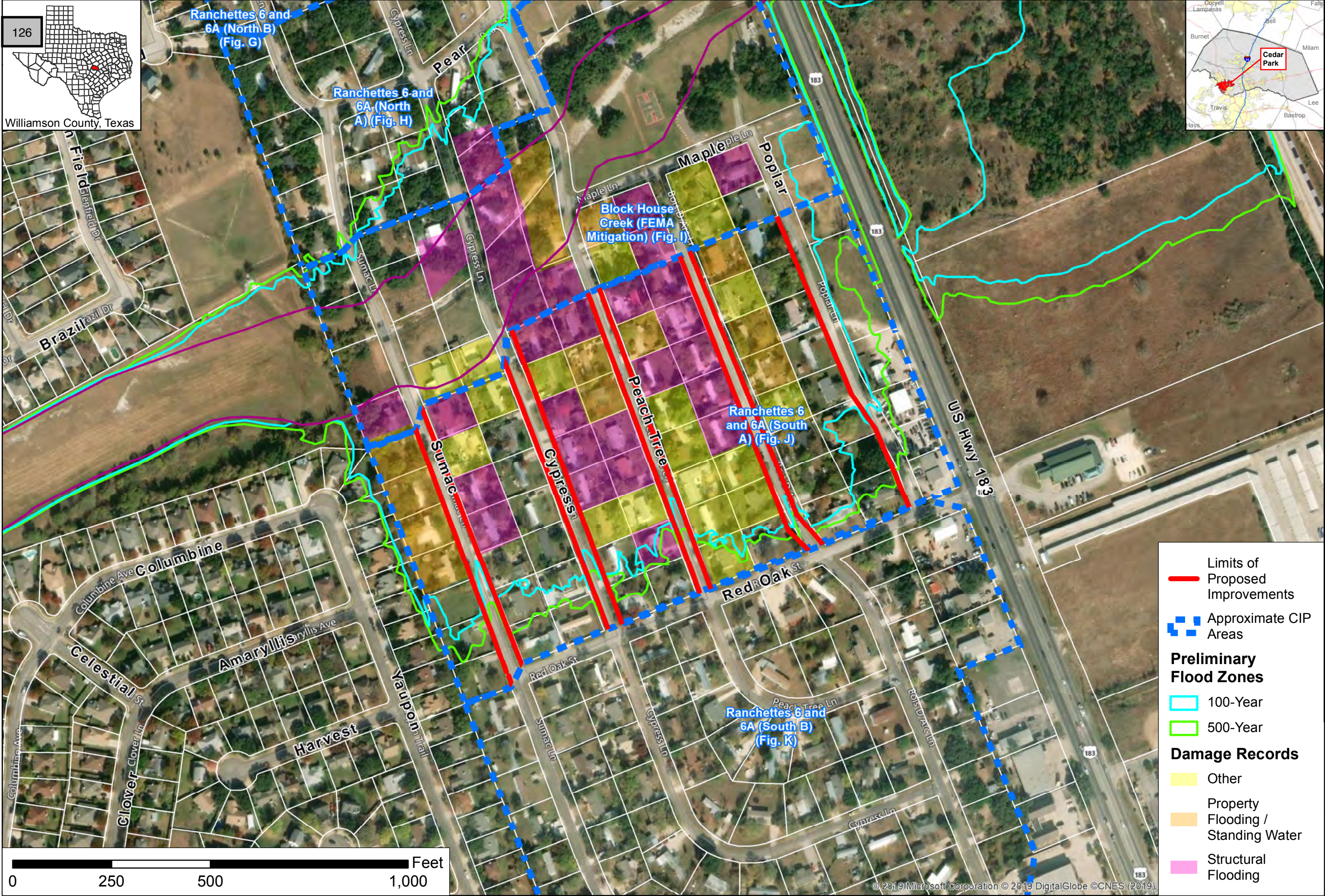
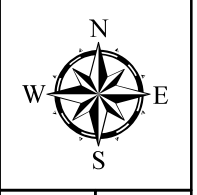
500

1,000

Feet



DATE CREATED	DATE	FILE NAME	PREPARED BY
2/11/2019	2/11/2019	NAD83 State Plane (feet) Texas Central	ME 20170601
PROJECT NO.			

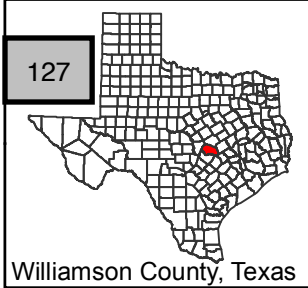


- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones
 - 100-Year
 - 500-Year
- Damage Records
 - Other
 - Property Flooding / Standing Water
 - Structural Flooding

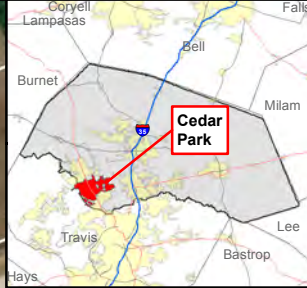
CITY OF CEDAR PARK
Ranchettes 6 and 6A (South A)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

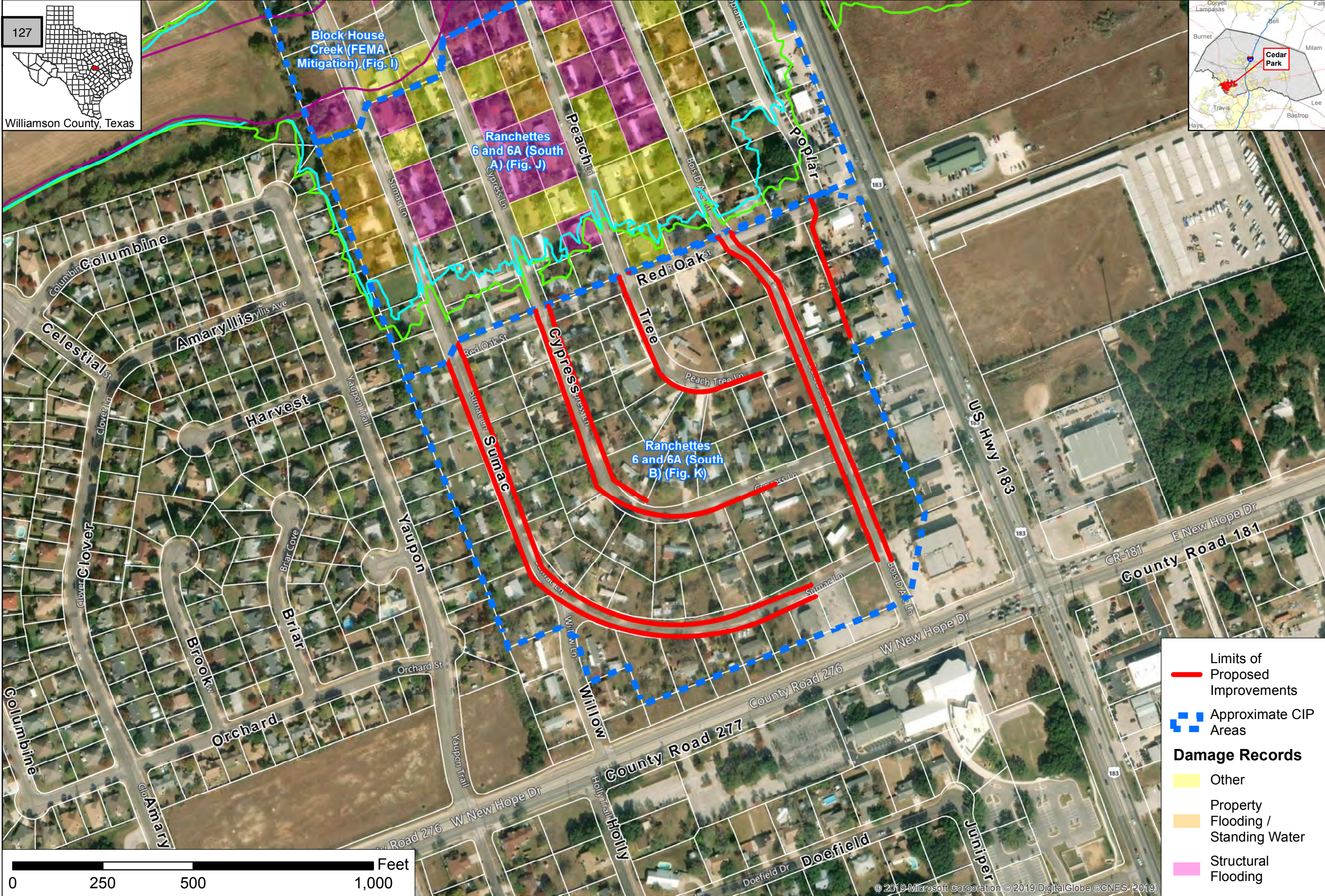
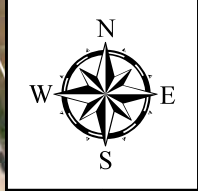
FIGURE
J



Williamson County, Texas



DATE CREATED	DATE	FILE NAME	PREPARED BY
01/10/18	2/11/2019	NA083 State Plans (fee) Texas Central	ME, 20170601
PROJECT NO.	COORDINATE SYSTEM	NAME	BACK



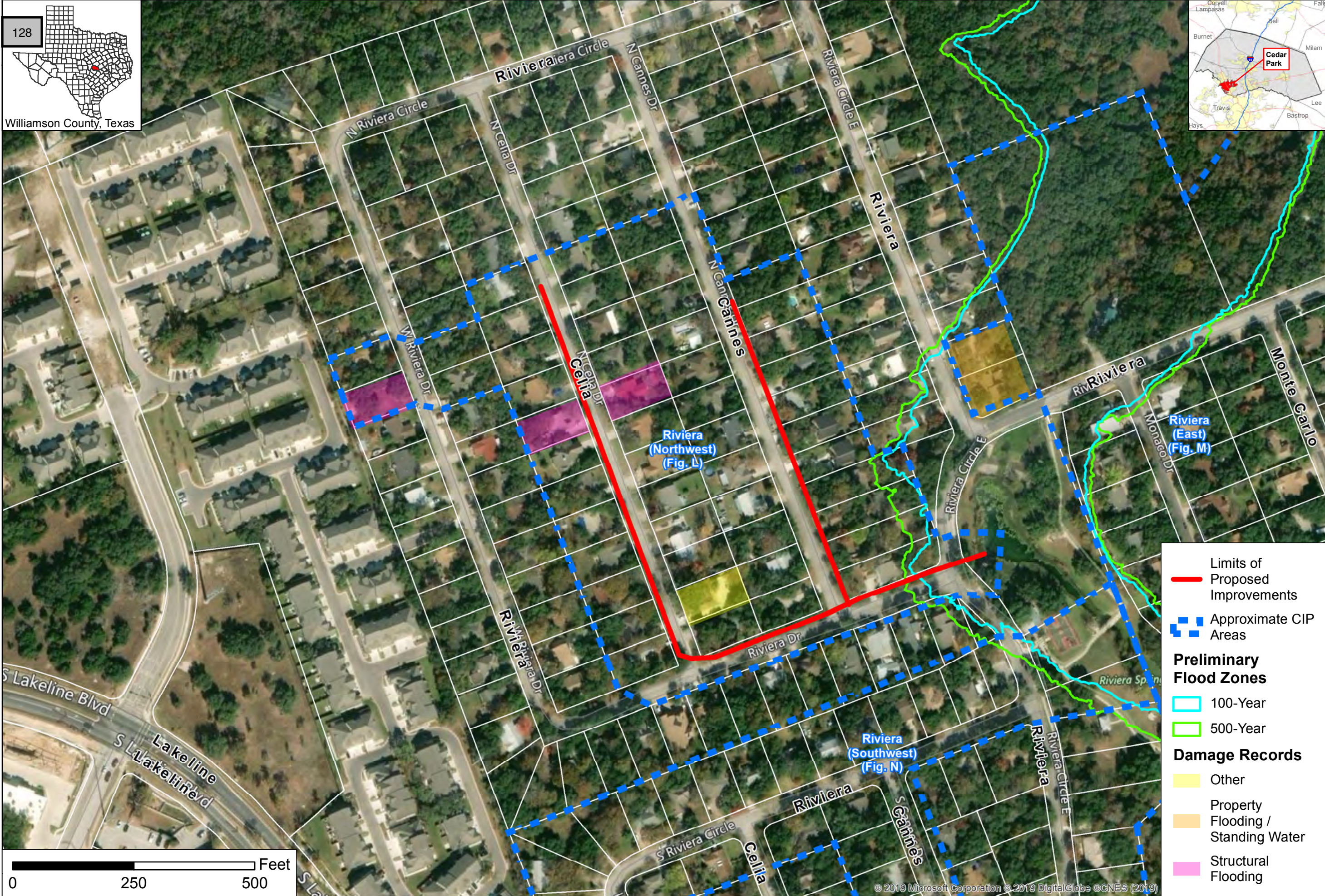
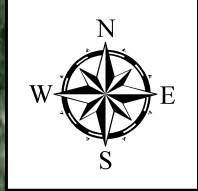
- Limits of Proposed Improvements
- Approximate CIP Areas
- Damage Records
 - Other
 - Property Flooding / Standing Water
 - Structural Flooding

CITY OF CEDAR PARK

Ranchettes 6 and 6A (South B)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

FIGURE
K



- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones**
 - 100-Year
 - 500-Year
- Damage Records**
 - Other
 - Property Flooding / Standing Water
 - Structural Flooding

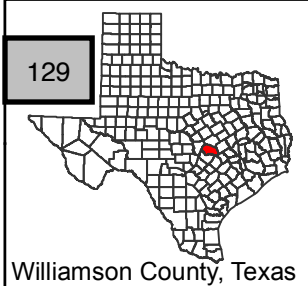
CITY OF CEDAR PARK

Riviera (Northwest)

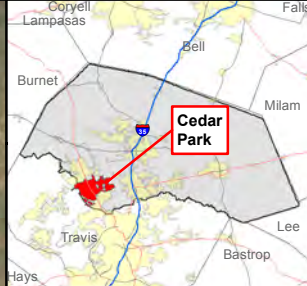
FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

FIGURE

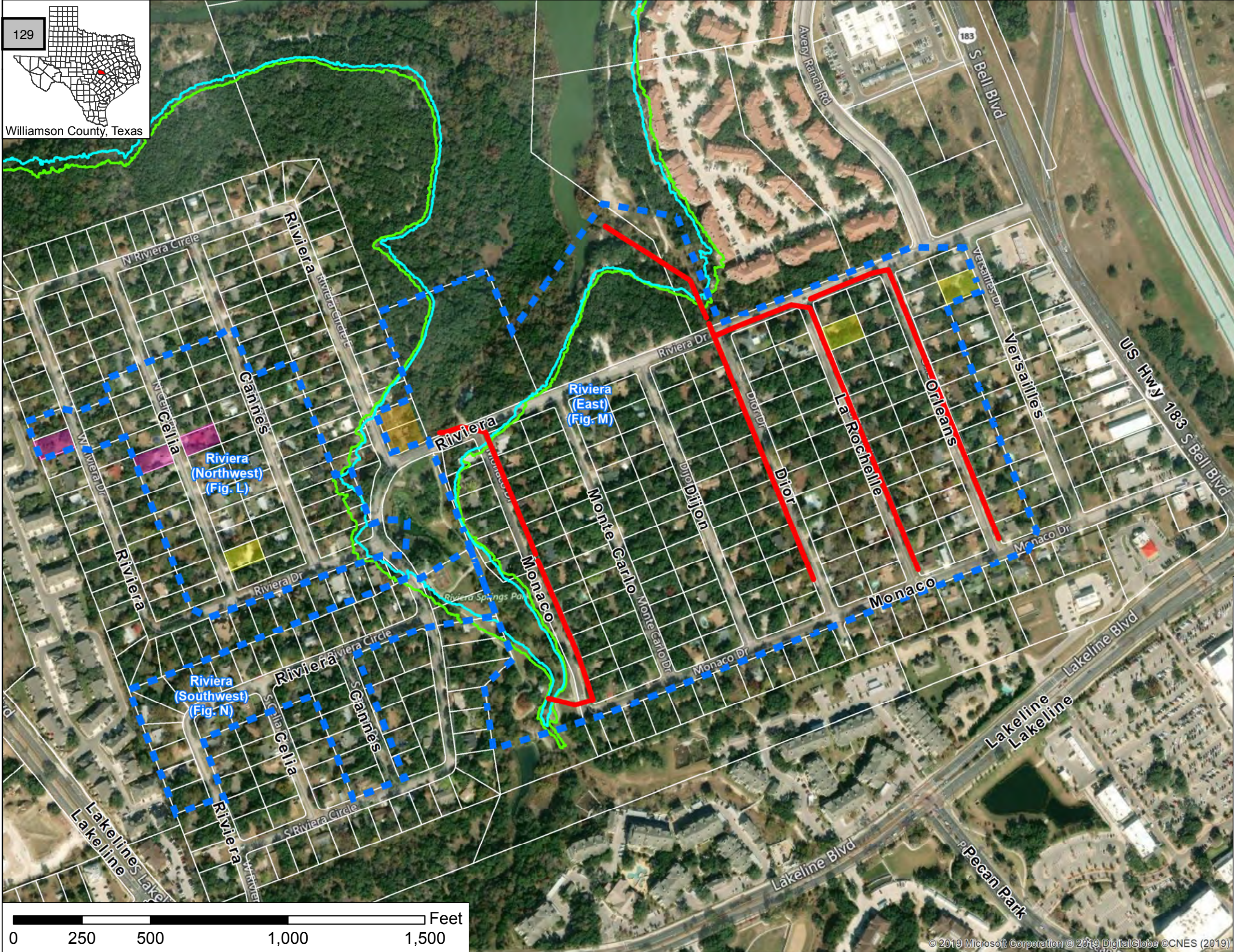
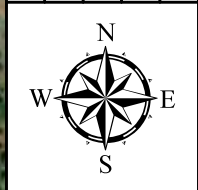
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Williamson County, Texas



CP10183	DATE CREATED	DATE: 2/11/2019	FILE NAME	NAME: ME_20170601	BACK
PROJECT NO.	DATE: 2/11/2019	DATE: 2/11/2019	NAME: ME_20170601	NAME: ME_20170601	NAME: ME_20170601
DATE: 2/11/2019	DATE: 2/11/2019	DATE: 2/11/2019	DATE: 2/11/2019	DATE: 2/11/2019	DATE: 2/11/2019
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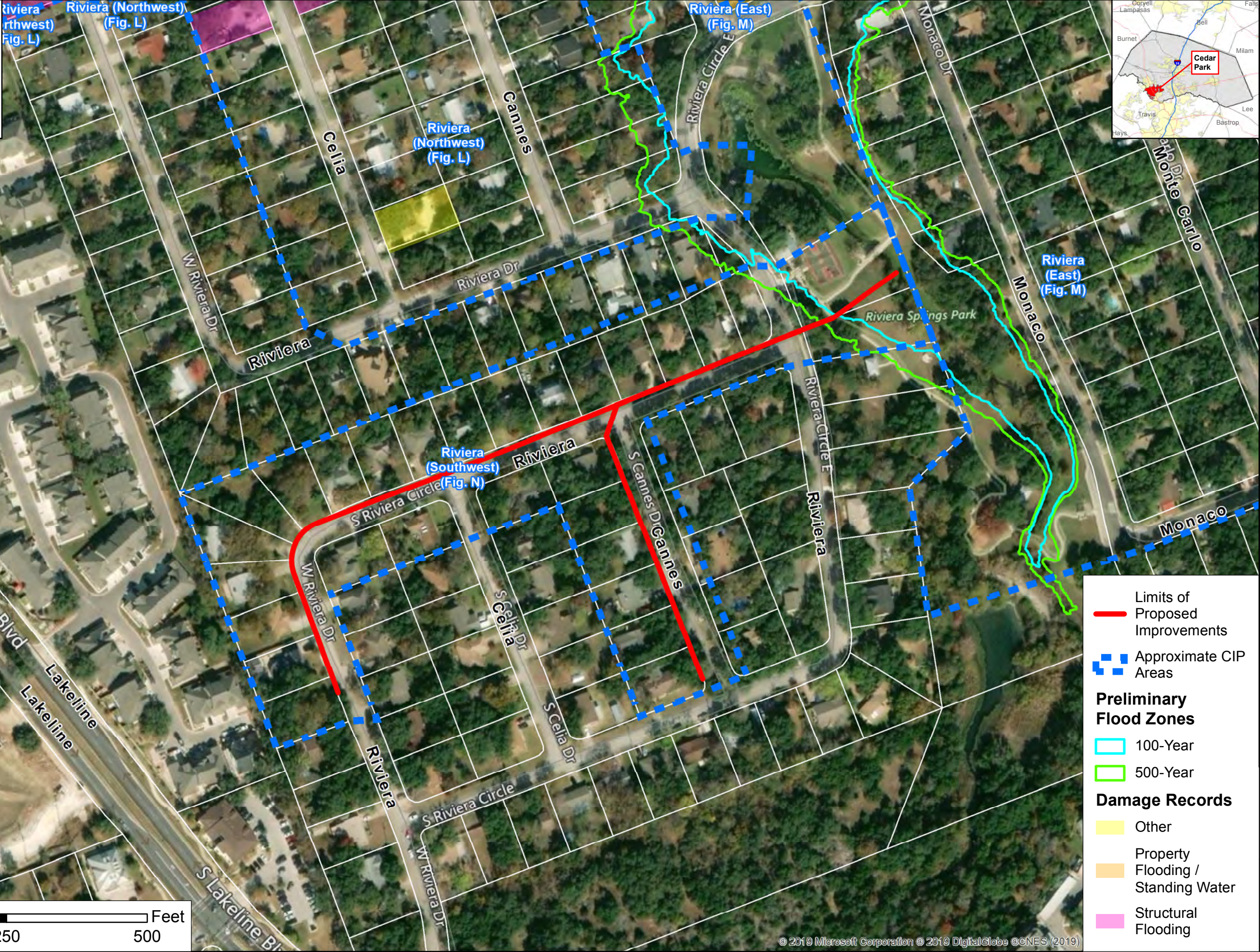
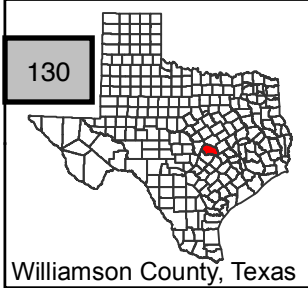
- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones
 - 100-Year
 - 500-Year
- Damage Records
 - Other
 - Property Flooding / Standing Water
 - Structural Flooding

CITY OF CEDAR PARK

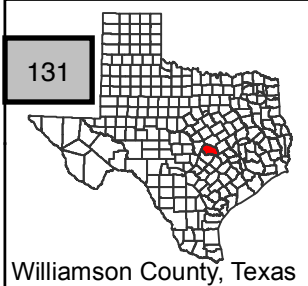
Riviera (East)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

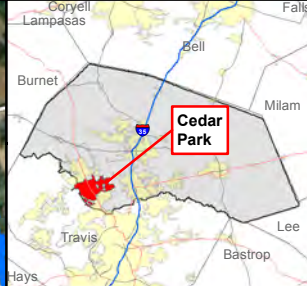
FIGURE
M



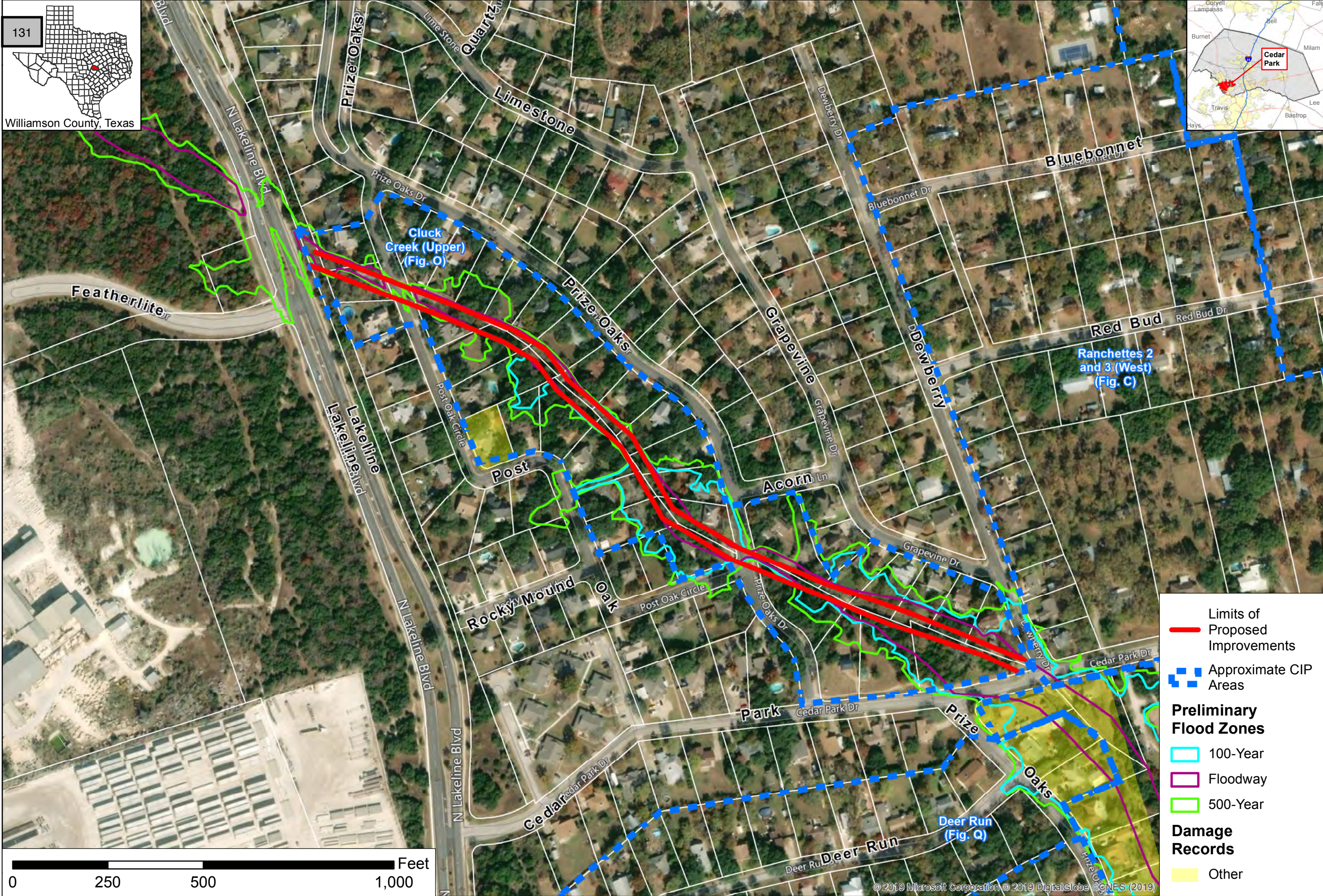
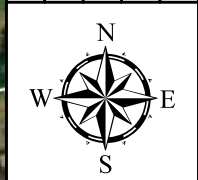
CITY OF CEDAR PARK	
Riviera (Southwest)	
FIGURE N	
FRESE AND NICHOLS, INC. 10431 MORADO CIRCLE SUITE 300 AUSTIN, TEXAS 78759 PHONE: 512-617-3100 FAX: 512-617-3101	
DATE CREATED: 2/11/2019 DATE: 2/11/2019 DUTY: UM & COORDINATE SYSTEM NAD83 State Plane (feet) Texas Central FILE NAME: MB_20170601 PREPARED BY: MB_20170601	



Williamson County, Texas



DATE CREATED	DATE	FILE NAME	PREPARED BY
01/10/19	2/11/2019	NAD83 State Plane (feet) Texas Central	ME_20170601
PROJECT NO.			



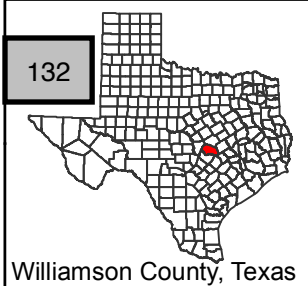
- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones
 - 100-Year
 - Floodway
 - 500-Year
- Damage Records
 - Other

CITY OF CEDAR PARK

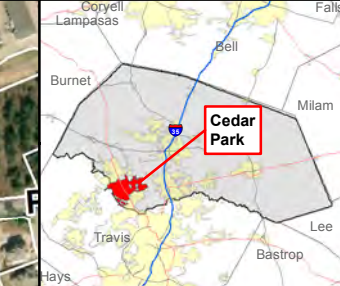
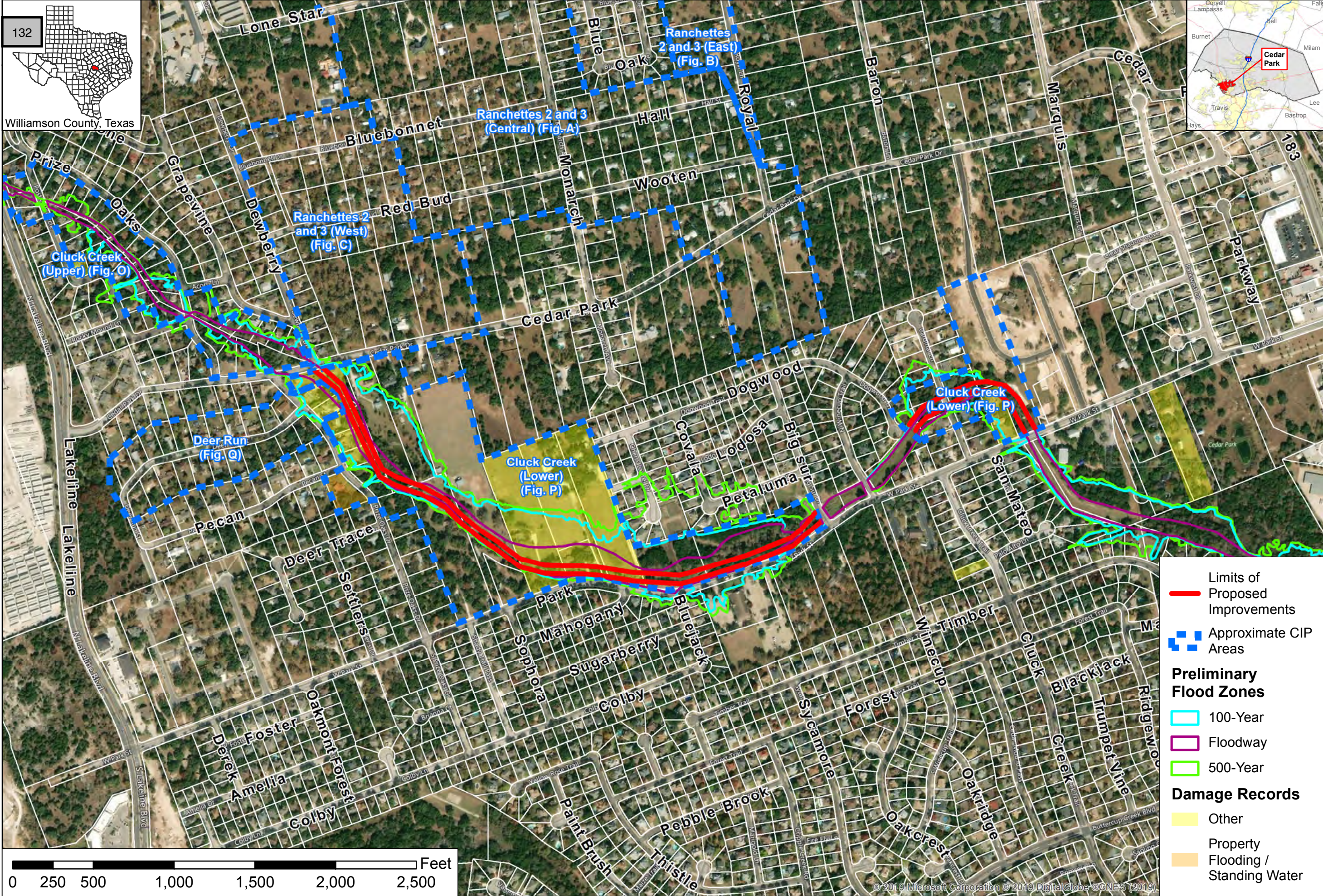
Cluck Creek (Upper)

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

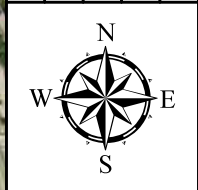
FIGURE
0



Williamson County, Texas



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2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019
DATE	DATE	DATE	DATE	DATE	DATE
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DATE	DATE	DATE	DATE	DATE	DATE
2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019	2/11/2019
DATE	DATE	DATE	DATE	DATE	DATE
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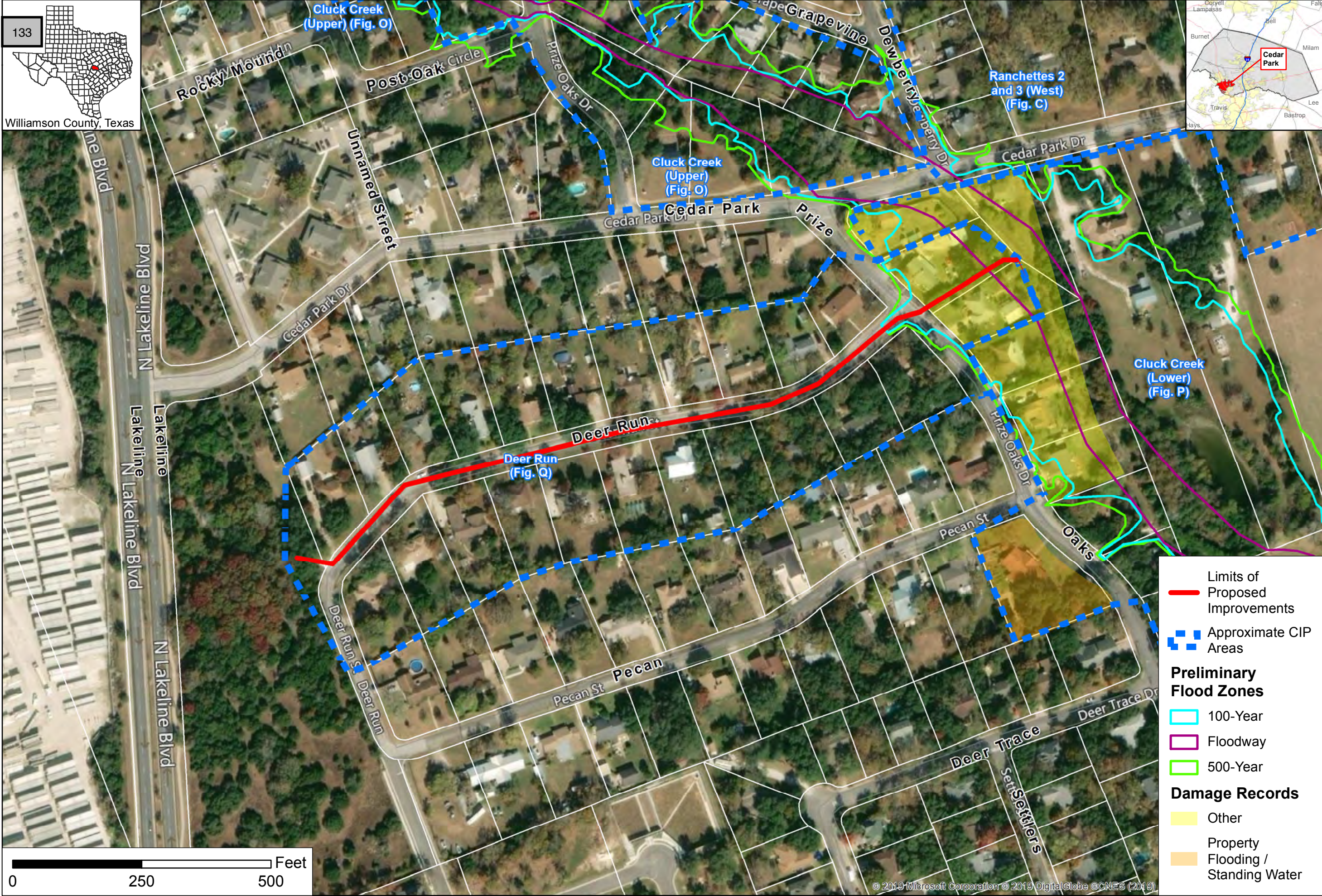
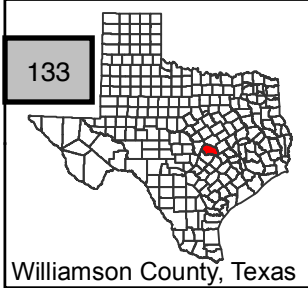
CITY OF CEDAR PARK

Cluck Creek (Lower)

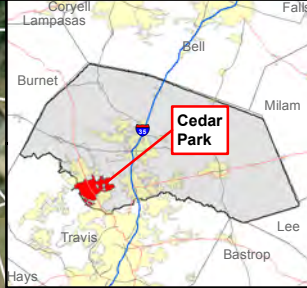
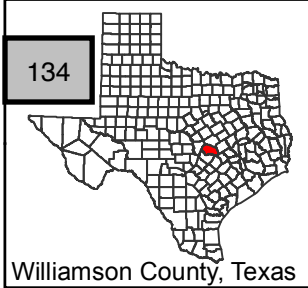
- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones
 - 100-Year
 - Floodway
 - 500-Year
- Damage Records
 - Other
 - Property Flooding / Standing Water

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

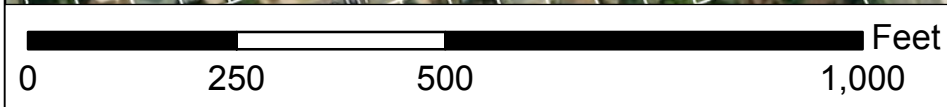
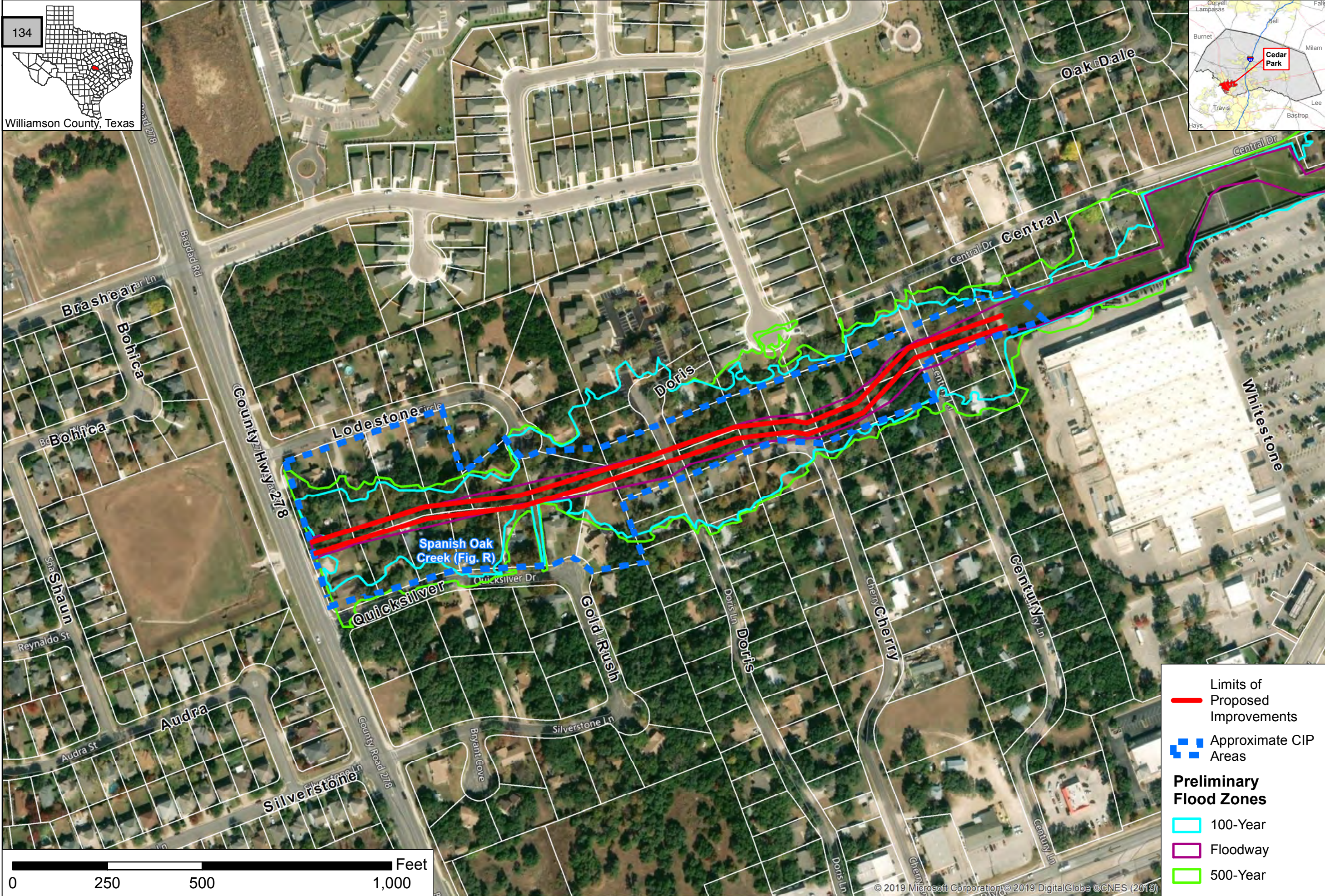
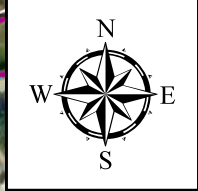
FIGURE
P



CITY OF CEDAR PARK	
Deer Run	
FIGURE Q	
FRESE AND NICHOLS, INC. 10431 MORADO CIRCLE SUITE 300 AUSTIN, TEXAS 78759 PHONE: 512-617-3100 FAX: 512-617-3101	
DATE CREATED: 2/11/2019 DATE OF COORDINATE SYSTEM: NAD83 State Plane (feet), Texas Central FILE NAME: Name: ME_20170601 PREPARED BY: BCK	



DATE CREATED	DATE	DATE	DATE	DATE	DATE
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PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.
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FILE NAME	FILE NAME	FILE NAME	FILE NAME	FILE NAME	FILE NAME
MB_20170601	MB_20170601	MB_20170601	MB_20170601	MB_20170601	MB_20170601
PREPARED BY	PREPARED BY	PREPARED BY	PREPARED BY	PREPARED BY	PREPARED BY
MB	MB	MB	MB	MB	MB



- Limits of Proposed Improvements
- Approximate CIP Areas
- Preliminary Flood Zones
 - 100-Year
 - Floodway
 - 500-Year

CITY OF CEDAR PARK
Spanish Oak Creek

FREESE AND NICHOLS, INC.
10431 MORADO CIRCLE
SUITE 300
AUSTIN, TEXAS 78759
PHONE: 512-617-3100
FAX: 512-617-3101

FIGURE
R